“

Internship Training

At

Eye Q Vision Hospital

STUDY TO ASSESS THE AWARENESS TOWARDS LASIK SURGERY FOR REFRACTIVE ERROR AMONG THE YOUNG ADULTS

By

Name : Dr Aditi Dhankar

Enroll No.: PG/19/005

Under the guidance of

Dr Nitish Dogra

“Post Graduate Diploma in Hospital and Health Management”

2019-2021

International Institute of Health Management Research

New Delhi

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Name: Dr Aditi Dhankar

'in recognition of having successfully completed his/her
Internship in the department of'

Operations(Hospital)

'and has successfully completed her Project on'

"Study to assess the awareness and attitide towards Lasik Surgeey for refractive Errors among young adults"

Date: 11.05.2021

Organization: EYE Q

'She comes across as a committed, sincere & diligent person
who has a strong drive & zeal for learning'

We wish him/her all the best for future endeavors.

MR VIKESH DHURIA
SENIOR MANAGER(NRR, GURGAON)
EYE Q VISION PVT.LTD

‘TO WHOMSOEVER IT MAY CONCERN’

“This is to certify that Dr Aditi Dhankar student of PGDM (Hospital & Health Management) from International Institute of Health Management Research, New Delhi has undergone internship training at Eye Q from 11.03.2021 to 11.05.2021”

“The Candidate has successfully carried out the work designated to her during internship training and her approach to the study has been sincere, scientific and analytical”.

The Internship is in fulfillment of the course
requirements.

I wish her all success in all her future endeavors.

Ms. Divya Aggarwal
Associate Dean, Academic and Student Affairs
IIHMR, New Delhi

Mentor
Nitish Dogra
IIHMR, New Delhi

“Certificate of Approval”

‘The following dissertation titled **“Study to assess the awareness towards Lasik Surgery For Refractive Errors in Young Adults” at “EYE Q VISION PVT LTD”** is hereby approved as a certified study in management carried out and presented in a manner satisfactorily to warrant its acceptance as a prerequisite for the award of **PGDHM (Hospital & Health Management)** for which it has been submitted. It is understood that by this approval the undersigned do not necessarily endorse or approve any statement made, opinion expressed or conclusion drawn therein but approve the dissertation only for the purpose it is submitted’

“Dissertation Examination Committee for evaluation of dissertation”

Name

Dr Preetha

Dr Sumesh Kumar

Dr Rajiv Pathni

“Certificate from Dissertation Advisory Committee”

“This is to certify that **Dr Aditi Dhankar,** a graduate student of the **PGDM (Hospital & Health Management)** has worked under our guidance and supervision. She is submitting this dissertation titled “**Study to assess the awareness towards Lasik Surgery for Refractive Errors among young adults”** at “Eye Q” in partial fulfillment of the requirements for the award of the **PGDHM (Hospital & Health Management)”**

This dissertation has the requisite standard and to the best of our knowledge no part of it has been reproduced from any other dissertation, monograph, report or book.

Dr Nitish Dogra
Associate Professor convenor, Centre for Climate Change and Environmental Health
IIHMR, Delhi

“CERTIFICATE BY SCHOLAR”

“This is to certify that the dissertation titled: “**Study to assess the awareness towards Lasik Surgery for refractive errors among young adults”** and submitted by Dr Aditi Dhankar, Enrollment No. PG/19/005 under the supervision of Dr Nitish Dogra for award of PGDM (Hospital & Health Management) of the Institute carried out during the period from 11.03.2021 to 11.05.2021 “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”

Signature

Dr Aditi Dhankar

FEEDBACK FORM

Name of the Student: Dr Aditi Dhankar

Dissertation Organisation: Eye Q Vision Pvt Ltd

Area of Dissertation: Operations

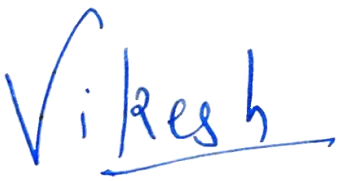
Attendance: full

Objectives achieved: Yes

Deliverables: Presentations, Training Report

Strengths: Disciplined, Multi-tasking, Good Learning, Team engagement

Suggestions for Improvement: Self decision making



Signature of the Organisation Mentor (Dissertation)

MR VIKESH DHURIA

SENIOR MANAGER(NRR,GURGAON)

EYE Q VISION PVT LTD

Date: 14/05/2021

Place: Gurgaon

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DELHI)

Last but not the least, an honorable mention to the teaching staff of IIHMR and colleagues for their help and support.

Dr Aditi Dhankar
PG/19/005

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ACRONYMS/ABBREVIATIONS

LASIK- Laser Assisted In Situ Keratomileusis

CMD- Chief Medical Officer

AGM - Assistant General Manager

ICL-Intra collamer Lens

NCT- Non Contact Tonometry

OCT - Optical Coherence Tomography

HVF -Humphrey Visual Field

FFA -Fundus Fluoroscein Angiography

PRK- Photorefractive keratectomy

I LASIK- Intralase Lasik

PMT - Post Mydraitic Test

ABSTRACT

A STUDY TO ASSESS THE AWARENESS TOWARDS LASIK SURGERY FOR REFRACTIVE ERROR AMONG YOUNG ADULTS

"Refractive errors" are one of the leading causes of blindness globally. Refractive errors can be easily treated but still it is an unaddressed issue. There are many options available for the same, **LASIK** being the most effective one. The objective of the study is (a) to study different types of Lasik surgery at Eye Q Hospital, (b) to assess the awareness towards Lasik surgery for refractive error among young adults. (c)To determine the factors that is withholding people to uptake the surgery. Methodology involved (a) the survey among 50 respondents who wear spectacles or contact lenses using an questionnaire were done. Sampling technique used was the convenience sampling. The findings came out with the mean age of 25.27 years. 86%participants were aware about the option of Lasik surgery for spectacles removal. However only 37% were willing to undergo this procedure out of which majority was the females i.e. 27 % and only 10% were males falling in the age range of 24-26 years. The major factors were appearance and convenience over spectacles.63% were not willing to undertake the surgery .Reasons given included fear of eye complications and long term side effects, unsure about safety , time constraints and comfortable with glasses. It could be concluded that there was relatively high level of awareness among the participants but negative attitude toward up taking the surgery. Education on alternatives for glasses mitigating the fear of complications could enhance the positive attitude among **youth**.

Keywords: refractive errors, LASIK, attitude, awareness, youth

ABOUT THE ORGANISATION

a. ORGANISATION PROFILE

EYE Q VISION HOSPITAL

The “Eye-Q hospital chain is committed to providing best quality eye care at affordable cost across India”. It is an ‘ISO 9001-2015’registered organization operating under the leadership of the ;Founder and CMD- Dr. Ajay Sharma, who is one of the most

renowned eye surgeons in India aided by a” team of specialists with rich experience in their respective specialties from top hospitals across the country”.

“Established in 2007, Eye-Q is today a chain of 38 super specialty eye hospitals with centres in Delhi-NCR, Haryana, Uttar Pradesh, Uttarakhand and Gujarat and in Africa with a centre in Lagos, Nigeria”.

Eye Q Hospital is rated best in India across 24 cities with the record of successful treatment by the experienced eye doctors trained internationally in performing surgeries with precision. Eye q has treated about more than 50 lakhs patients in past 13 years without any complications.

Eye-Q has the highest success rate and best patient care experience. Patients at EYE Q are catered with the best services and facilities by the staff and management for quick recovery. Patients undergoing surgeries are also provided with the psychological counseling.

SERVICES AT EYE Q HOSPITAL

- “General Eye Care”
- “Cataract Surgery”
- “Lasik Surgery”

 “Retina Treatment”

 Glaucoma Treatment

 “Pediatric Services”

 “Occuloplasty Surgery”

 “Squint Surgery”

 “Optical Services”

 “Implantable Collamer lens”

 “Contact Lenses

” Complete Eye Care”

TOOLS AND EQUIPMENTS USED AT EYE Q FOR EYE CHECK UP

1. “AUTO REFRACTOMETER”

It is a “computer controlled machine used for the eye examination of the patient”. It helps to provide with objective measurement for the refractive error and/or prescription for the spectacles. Principle behind AR working is it measures how light changes as it enters person’s eye.AR is used for almost every patient except for the patients who have an eye injury and need immediate treatment.

2. NCT

Non contact tonometry is an eye puff test used to measure the intraoccular pressure of the eye. Normal intraoccular pressure ranges between 14-21 mm HG.

3. SNELLENS CHART

 The “Snellen eye chart is the eye testing chart used by eye care professionals to measure visual acuity”, or how well a patient can see without glasses or contacts.

 “The Snellen eye chart is the familiar, clasic chart of big and little letters. The chart consists of 11 lines of block letters, begining with a large single letter on the top row. The number of letters in each row increases moving from top to

bottom. The size of the letters decreases, allowing for more letterson each subsequent line".

4. TRIAL SET & FRAMES

An eye glass "frame designed to permit insertion of different lenses used in correcting refractive errors of vision".

5. SLIT LAMP

 Slit lamp is used by an ophthalmologist for examination of eyes . It is a microscope with a bright lamp which helps in determining the eye health and diagnosing any eye disease or other abnormalities by giving closer view at different structures at front of the eye and inside of the eye.

 90 D & 78 D Lens are used in undilated eye.

 20D Lens are used in dilated to examine the retina.

6.INDIRECT OPTHALMOSCOPE

 It is an examination for the inside of the back of the eye (fundus or posterior segment).

 20 D lens is used with dilated eye

7. DIRECT OPTHALAMOSCOPE

The "direct ophthalmoscope allows you to look into the back of the eye to look at the health of the retina, optic nerve, vasculature and vitreous humor. This exam produces an upright image of approximately 15 times magnification".

8. RETINOSCOPE

Use to "determine the refractive error of the eye (farsighted, nearsighted, astigmatism) and the need for glasses. The test can be quick, easy, reliably accurate and requires minimal cooperation from the patient".

PROCEDURES USED FOR INVESTIGATIONS AT EYE Q HOSPITAL

1. ASCAN

 It is used for measurement of axial to calculate power of IOL lens

 Measure steepness of cornea (keratometry)

2. BSCAN

 It is used in case of keratoplasty,mature cataract, &when direct view is not possible

 Used to evaluate posterior segment

3. “FFA”

(Fundus Fluorescein Angiography**)** is a “:dye tracing procedure for checking blood circulation of retina and choroid by using a fluorescent Dye and specialized camera ;FFA

can detect Diabetic retinopathy, vein occlusions, and tumors of eyes”

“4. “HVF”

(Humphrey Visual Fields) is “non-invasive imaging test which consists of center fixation of light and blinking test lights in side vision for eye checking”.

It also measures the area of vision, and how wide of an area you can eye can see as Glaucoma affects the peripheral, or side vision, first

5. PACHYMETERY

Pachymetry is the procedure done before the lasik surgery to determine the corneal thickness, structure and integrity as well as to determine the how flat or steep the cornea is. Based upon the corneal thickness and number of eye , eligibility is decided and further counselling is done in which patients are informed about their parameters, possibilities, possible risks, and best package treatment is recommended with realistic expectations.

6. “OCT”

(Optical Coherence Tomography) is a" non-invasive imaging test which uses light waves to take images of the retina and is also used in the diagnosis of age-related macular

degeneration and diabetic retinopathy".

8. ROP

"ROP Screening is a procedure that detects retinopathy in premature infants. Retinopathy can occur only in immature retinal tissues and can lead to permanent vision loss in children. ROP screening should be thoroughly done by the retina specialist doctors in order to detect damage".

b. VISION,MISSION & VALUES

"*VISION"*

"*To be India's foremost chain of eye hospitals in terms of both Quality of eye care and the Number of patients handled at affordable cost"*

"MISSION"

"To make every patient an Ambassador for Eye-Q through a combination of

- *"Highest level of quality and technology in eye care".*
- *"Exceptional personal care"*
- *"Complete integrity to the patient and his/her need".*

"VALUES"

 ‘Be honest and open in my communication and do what I say I will do’

 ‘I accept our individual & team responsibility and meet my commitments each & every time’

 ‘Our clinical & non clinical team is supportive of each other’s efforts and care for each other’

 ‘Give care, compassion & respect to patients and colleagues as I expect for Myself’

 ‘Will make conscious effort to contribute in creating a social impact’

 ‘Will embrace and drive positive change’

 'Proud of Eye Q’

c. KEY LEARNINGS AT EYE Q HOSPITAL

 Basic structure of eye & eye anatomy

 Work flow of eye q hospital

 Dilatation process

 In depth knowledge about different equipment s and procedure used for diagnoses and eye check up

 Complete product knowledge :

 Cataract surgery & their types

 Lasik surgery &different techniques used at Eye Q

 ICL Surgery

 Retinal disorders and their treatment

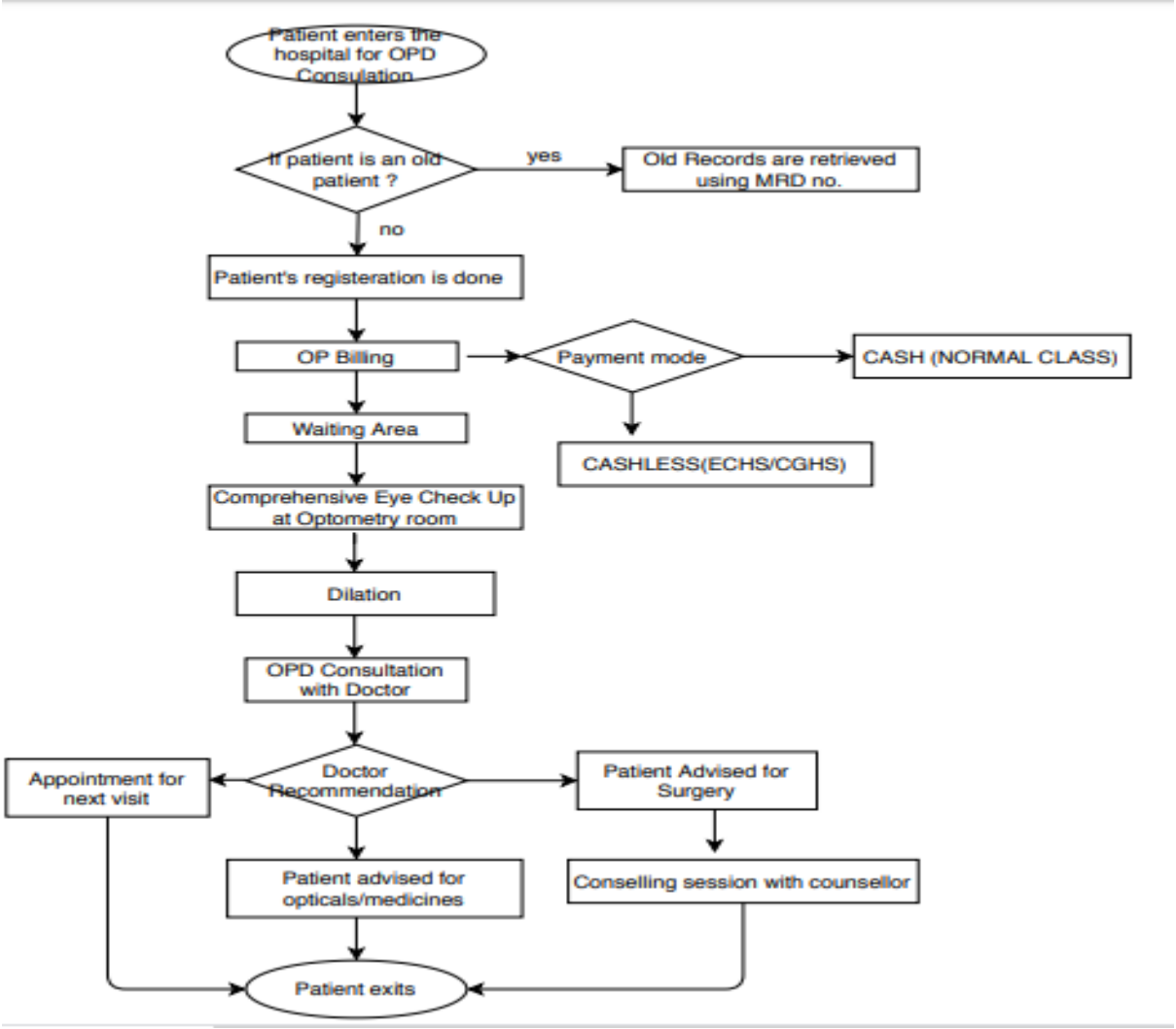
 Glaucoma services

 Counselling sessions :tools and techniques used for conversion of patients

 Marketing strategies and activities used at eye q hospital

 Introduction to Digital Marketing

WORK FLOW AND OVERVIEW OF DILATATION PROCESS



“DILATATION PROCESS”

“*During an eye examination, the doctor may dilate the eyes of patients so that they can look*

at the struures located at the back of the eye that includes for abnormalities that may indicate the following conditions:

- *“**High blood pressure”: ‘**The retina’s blood vessels can also experience the damage if there is high blood pressure that goes untreated, especially long term.*
- *“**Retinal detachment”: ‘**This refers to the retina pulling away from the blood vessels that are attached to it. As a result, the retina gets insufficient nutrients and oxygen.’*
- *“**Diabetes”: ‘**People with diabetes are at risk for diabetic retinopathy, especially if the high blood sugar levels are uncontrolled over the long term. This condition affects the retina’s blood vessels’.*
- *“**Macular degeneration”: ‘**This condition is characterized by the macula element of the retina sustaining damage. It can result in vision loss that is irreversible’.*
- *“**Glaucoma”: ‘**There are different types of glaucoma that result in damage to the optic nerve. Eye pressure getting abnormally high is the typical cause of the*

damage.'

Eye dilation may be done as part of a comprehensive eye examination or to look for an acute injury, such as a retinal detachment. No matter the reason for the dilation, it is performed in the same manner. The doctor will input eye drops that work to widen the pupil of eye.

Drops are used 3 times at the gap of 15 minutes to dilate the pupil.

People may find the symptom of blurness for 3-4 hours

Post dilation, PMT test is done to check for the refractive error

PROJECT OVERVIEW

PROJECT TITLE- LASIK TRAINING AT EYE Q

OBJECTIVE OF THE STUDY

1. To study about different LASIK techniques at Eye Q Hospital for the refractive Errors.

2. To assess the awareness and attitude towards LASIK surgery for refractive error among young adults.

3. To find the factors that are barriers to undertake this surgery.

METHODOLOGY

 Survey using questionnaire during counselling sessions among young people with refractive error is done which include demographic data, general eye health practices and their awareness about the surgery.

 Sample Size -50

 Sampling Technique - Convenience Sampling

 Study Design - Descriptive.

"INTRODUCTION"

‘Refractive errors are one of the leading causes of blindness globally’. According to World Health Organization, ‘123.7 million people’ have severe or distance vision ‘Impairment or blindness’ due to unaddressed refractive errors. Refractive errors affect almost every age group and a ‘major public health’ challenge in most developing countries including India. Refractive errors can be easily treated with spectacles, which is the most cost effective treatment available still it is unaddressed and second leading cause of blindness and now a priority under ‘Vision 2020 ‘–“ The Right to sight,

which is a joint global initiative of World Health Organization and International ‘Agency for the prevention of blindness aimed at eliminating the avoidable blindness by the year 2020”.

Refractive error is an eye disorder in which the light is not focused on the retina and the image formation is blurred. It is an optical defect which occurs due to the length of eye ball (too short or long), changes in the shape of cornea or due to decreased ability of ciliary muscles holding the lens to accommodate. Symptoms include blurred vision, multiple visions or double vision, night blindness, halos around the bright light.

Thre are 4 types of refractive errors: Myopia, Hyperopia, Astigmatism, & Presbyopia

1. “MYOPIA”

 ‘Myopia is the condition in which corneal curvature becomes steep causing light rays to focus in front of retina’.

 ‘Eyeball’ is too long or the refractive power of the eye is too strong

 Focal point is in the front of the retina

 Symptoms include blurred vision, difficulty seeing distant or far away objects clearly

 Correction is done using concave or diverging lens or minus lens.

2. “HYPEROPIA”

 ‘Hyperopia’ is the condition in which ‘light rays focus behind the retina.’’ Eyeball is too short or refractive power of the eye is too weak

 Focal point is behind the retina

 Symptoms include blurred vision, difficulty seeing far or near objects

 Correction include convex or converging lens or plus lens

3. “ASTIGMATISM”

‘Astigmatism’ is the condition in which the light strikes at more than one area at the back of the eye i.e. more than one focal point is present which causes distorted image.

 Eyeball is elongated or refractive power of the eye is too strong or too weak in one direction

 Two focal points are formed

 Symptoms include blurred vision, difficulty seeing near or distant objects

 Correction include plus or minus cylindrical lens

4. PRESBYOPIA

 It is muscular refractive error occurs in aged population above 40years.

 The flexibility of muscles decreases i.e. the ability of muscles holding the lens to change shape decreases resulting in inability of lens to bend light to focus at the back of the eye.

 Symptoms are gradual deterioration of eyes affecting working close and near vision, working or reading difficulties at one arm distance, strain on eyes, headaches & fatigues.

 Correction includes Bifocal lens or trifocal lens. A bifocal lens helps with the distant and near vision while trifocal lens helps with distant, intermediate and

near vision.

DIAGNOSIS OF REFRACTIVE ERRORS

 AR (AUTO REFRACTOR) – It is a computer controlled device used to give objective assessment of the vision and prescription for eye glass. It works on principle how eye changes when light enters the eye.AR is used for almost every patient except for the patients who have an eye injury and need immediate treatment.

 NCT – Non contact tonometry is an eye puff test used to measure the intraoccular pressure of the eye. Normal intraoccular pressure ranges between 14-21 mm HG.

 LENSOMETER - Lensometer is the instrument used by the optometrist to verify the correct prescription for spectacles.

 VISUAL ACUITY - Visual acuity is defined as how well the person see the details of a letter or a symbol from a specific distance.It is generally measured using the projected chart which has big and small letters called the Snellel Chart. The first line of a chart has a single letter , which progressively increases in below lines. As the number of alphabets in a row increases,size decreases. The ability of a person to the read the smallest alphabet is determined as visual acuity. The ability to read the last line of snellel chart is called 6/6 vision,which is considered as the normal vision.

 SLIT LAMP EXAMINATION

 Slit lamp is used by an ophthalmologist for examination of eyes . It is a microscope with a bright lamp which helps in determining the eye health and diagnosing any eye disease or other abnormalities by giving closer view at different structures at front of the eye and inside of the eye.

 90 D & 78 D Lens are used in undilated eye.

 20D Lens are used in dilated to examine the retina.

 RETINOSCOPE

It is an instrument used to diagnose the refractive error in those patients who are difficult to handle I.e. elderly or children.

EVOLUTION OF REFRACTIVE SURGERY

The use of surgical procedures for correcting the refractive errors has come a long way. The two types of these procedures are corneal procedures and intraoccular procedures. The corneal procedures have evolved from thermokeratoplasty, radial kerotometry, PRK, epilasik, lasek, conventional Lasik, wave front guided Lasik, intralasik, smile and collagen cross linking. The intraocular procedures have evolved from phakic IOLS, toric IOLS, refractive lens exchange and IOL accommodation. Thermokerotoplasty involves shrinkage of cornea using heat. Radial keratometry involves small corneal ring incisions for flattening the cornea. Corneal cross linkage helps in treating the corneal ecstatic conditions using riboflavin and exposing it to ultraviolet A radiations to promote collagen in cornea .The Laser refractive surgery involves the excimer laser. PRK is a surface ablation technique whereas LASIK is a flap making procedure with microkeratome or intralase laser. Epilasik and lasek involves epithelium preservation.Phakic IOLS involve lens implantation' in the presence of crystalline lens', toric lens are used in the cases where cylindrical power is higher than 1D and 'refractive lens exchange' involve 'removal of crystalline lens and implantation' of artificial lens in the posterior chamber of the eye. With the advancements, broader options are available now for treating the refractive errors. The physicians can now provide with the appropriate treatment from the options available based on the patients risk benefit profile. Each option has its own benefits

and some low rate risks. Laser surgery (such as laser assisted in situ keratomileuses), surface ablation techniques (such as Lasik epithelium keratomileuses) and PRK have now been established as the safe procedures with the excellent visual outcomes for treating the low to moderate range of refractive errors. Compared with these first line laser treatments, a minimally invasive flapless SMILE surgery which involves extraction of corneal lenticule through femto second laser has similar efficacy, predictability and safety. With these emerging techniques and trends, the physicians and ophthalmologists must be aware about the advantages and possible disadvantages

of the refractive surgeries and the selection of the best suited treatment for patients should be considered accordingly. In case the patient is not eligible for the corneal refractive surgeries, intraocular procedures are the best option.

"LASIK"

"LASIK (Laser assisted in situ keratomileuses) surgery" is the refractive surgery for treating the refractive errors: myopia, hyperopia and astigmatism by reshaping the cornea. By using excimer laser, a part of corneal tissue is removed which changes the focusing power of cornea, thus reducing dependency on glasses or contact lenses. It is an 'outpatient procedure which takes about 15 minutes'. It is considered as an elective cosmetic surgery which is not covered under the medical insurance. It can improve the quality of life of patients. About 99 percent of patients can achieve 20/20 vision and 90 percent achieve 20/40 vision. LASIK is permanent and designed to last during lifetime .Therefore, it can have positive long lasting effect but ageing does occur. A secondary surgery could be required to treat Presbyopia. But LASIK does not increase the risk of Presbyopia. Like any other treatment, the outcomes of LASIK are based on certain parameters such as efficacy, safety, precautions, predictibalitity, and patient's satisfaction. Each factor must be determined and physician must evaluate the patient's

expectations of the procedure so that patient must aware and informed about the realistic expectations.

LASIK PROCEDURE STEPS

Lasik procedure involves basically two steps, i.e. creating of flap either with blade or laser and using excimer laser for removing the part of middle layer of cornea for reshaping the cornea and flap is repositioned. The procedure generally takes about 15 minutes in an operation theatre and during which laser is used for less than a minute in an eye for reshaping. However, the actual time may vary according to the condition and severity of refractive error and corneal thickness. It will vary from patient to patient.

 Before the procedure begins, topical eye drops are used for numbing the eyes, called topical anesthetics.

 The patient is laid in bed, the eyelids of the patient are held open for fixing the flap making instrument in order to make precised flap. Flap is either made by blade called microkeratome or using the intralase laser.

 The patient is asked to focus on the fixation light; the surgeon activates the instrument for flap making, revealing the middle layer of cornea.

 Finally, excimer laser is used for reshaping the cornea. Specifically, in case of myopia, laser is used in the centre of the cornea than around for removing corneal tissue from centre to flatten the cornea and the converging power of eye is reduced.

 In case of hyperopia, laser is used to enhance the converging power of eye, therefore corneal is steepened and laser is used to remove corneal tissue from the periphery than centre. In case of astigmatism, corneal shape is made uniform by removing more tissue in one direction.

 Lastly, the flap is re positioned. Natural forces keep the flap in place until surface healing takes place.

 The procedure is done but there are some post operative precautions that must be followed by the patients.

POST OPERATIVE PRECAUTIONS FOR LASIK SURGERY

Taking care post Lasik procedure will reduce the low rate risks and side effects associated with the Lasik procedure. It can improve the healing time and satisfaction rate of the patients and also minimize the complications.post operative care is very important for the healing of the tissue. To start off with, follow ups are crucial part of post operative care. Patient needs to visit the surgeon within 24-48 hours after the procedure to determine the eye health. A recovery plan is then formed by the surgeon which includes specific guidelines and list of dos and don'ts to be followed by the patient in order to see the results the patient want after the surgery. Basically post

operative care is how the patient takes care of his eyes to see the optimal results. A post operative recovery plan may include the topical eye drops to avoid the dryness and to keep the eyes moist and also pain killers are prescribed to treat the discomfort that occurs within 1-2 days after the surgery. Follow ups should be continued for at least 6 months to check for the recovery and healing and ensuring everything is going as per expected. In case, recovery is not as per expectations, alterations to the recovery plan may be avoided. The first 24 hours are very crucial for the recovery and any eye strain should be avoided during this time. Patient may be able to resume for normal work after day or so. Also, it is very important to not to rub the eyes to avoid any inflammation and infection and dislodging of the flap. The vision after LASIK may stabilize but the healing process last from about 3-6 months. First 6 hours after Lasik it is advisable to keep the eyes closed and avoid the bright lights to avoid the

discomfort, and lubricating eye drops and pain killers are prescribed. First 24 hours after Lasik, all the gadgets such as smart phones, computers, television must be avoided along with the reading or doing any activity that cause eye strain. Patient can bath after 24 hours, but caution must be taken that soap or any other chemical should not get into the eyes. Eye rubbing should be avoided and protective shield or black glasses can be used to prevent bright light from entering the eyes. Patients also need to have appointment as a part of follow up plan.1-2 weeks after Lasik; patient is advised not to wear eye makeup or any creams or lotions that may cause infection in the eyes. Also patients must wear sunglasses when going out in the sun. Patients are advised to avoid sports during this period and avoid going to swimming pools which may have contaminated water.1 month after Lasik, patient can resume to sports with precautions .3-6 months after LASIK, eyes will continue to heal and vision is improved progressively. However severe conditions make take longer time. Patient is advised to stick to the follow up plans and the recovery plan prescribed by the surgeons.

Some of the possible side effects can be experienced by the patients such as visual disturbances, glares, itchiness, and dry eyes. If the post operative care is not taken properly, these complications will take longer to recover. So it is very essential to take care of eyes for the healing process in order to avoid the complications.

General instructions for post operative care:

i. Do not rub the eyes.

ii. Limit the screen time.

iii. Avoid showers for week so that shampoos and other chemicals do not get into the eyes, bath can be taken.

iv. Driving should be avoided until patient can see clearly.

v. Wear sunglasses while going out and avoid the spas, and sonas.

vi. Wear protective eye shield as recommended by the doctors.

vii. Use lubricating eye drops.

viii. Eye make should be avoided.

ix. Follow ups must be taken to ensure the recovery.

ELIGIBILITY CRITERIA FOR LASIK

LASIK eye surgery is not for everyone. The qualifications for a good candidate are:

I. Age must be 18 years or above. It should be between 18-35 years. Age below 18 years is growing age and a lot of changes takes place in the body and similar is the case with the power of eye. It is considered the power of eye may vary until this age. Also LASIK is not a good option to consider in late thirties due to age related changes. After 40s, there is tendency to develop Presbyopia, which would require the need for glasses for near vision.

II. Stable refraction for 6-12 months is mandatory to ensure that there will not be further increase or decrease in the power of the eye and correct power is detected and treated.

III. Eye health is another qualification. Patients considering undergoing this procedure must not have any inflammation, dryness in the eyes or other conditions like conjunctivitis.

IV. Thickness of cornea must be at least 450-500 microns depending upon the patient's profile.

V. Myopia no worse than -12D as higher the power, more corneal tissue burn is required.

VI. In myopia cases, LASIK can be done from -0.5D to -6D.

VII. In hyperopia cases LASIK can be done from 1D to 6D.

VIII. In astigmatism cases, LASIK can be done in patients up to 5D.

IX. Candidates with pregnancy or lactation are not advised this procedure

X. Those patients with retinal eye disorders and glaucoma patients are not advised LASIK.

PRE OP INVESTIGTIONS REQUIRED

i. AR : Auto Refractor is the computer oriented machine which gives the objective assessment of persons vision and the prescription for glasses or contact lenses.It works on the principle that how persons eye changes when light enter the eyes.

ii. NCT : Non contact tonometry also called air puff test is used to determine the intraoccular pressure in the eye. The normal range of pressure is 12-22 mm Hg. The elevated pressure indicates glaucoma.

iii. VISUAL ACUITY : Visual acuity is defined as how well the person see the details of a letter or a symbol from a specific distance.It is generally measured using the projected chart which has big and small letters called the Snellel Chart. The first line of a chart has a single letter , which progressively increases in below lines. As the number of alphabets in a row increases,size decreases. The ability of a person to the read the smallest alphabet is determined as visual acuity. The ability to read the last line of snellel chart is called 6/6 vision,which is considered as the normal vision.

iv. PACHYMETRY : Pachymetry is the procedure done before the lasik surgery to determine the corneal thickness, structure and integrity as well as to determine

the how flat or steep the cornea is. Based upon the corneal thickness and number of eye , eligibility is decided and further counselling is done in which patients are informed about their parameters, possibilities, possible risks, and best package treatment is recommended with realistic expectations.

v. FUNDUS EXAMINATION: Fundus examination is also very important before performing LASIK as light is focus on the retina and if retina is not healthy , there will be vision related problems. It is done by OCT I.e Optical coherent tomography which is non invasive procedure that uses light energy to capture retinal images for diagnoses of retinal related disorders or it can be also done through fundus photo , in which a florescence dye is in injected in blood vessels to capture the images of macula

vi. PHYSICIAN CLEARANCE: At last, physician clearance is required that patient is healthy, blood glucose levels are in normal range,blood pressure is in normal range and patient is fit to undergo this surgery.

TYPES OF LASIK AT EYE Q:

There are three types of LASIK surgery performed at Eye Q Hospital for treating the refractive errors.

1. STANDARD LASIK : Standard LASIK is the conventional technology in which the flap is made manually with help of blade called microkeratome,and excimer laser is used for vision correction.

2. CUSTOMIZED LASIK: The procedure is same as the standard lasik but in this customized chip is used for patients vision correction. Wave scan is the machine which is used in customized lasik to add personalization and unique characteristics of the eye including high order abbrations.this is called wave-front guided lasik.It is advantageous to those patients with astigmatism. The excimer laser will only be used at the corneal surface where it is required thus maintaining the corneal thickness unlike the standard lasik.

3. INTRALASE LASIK: This is the most advanced technology in Eye Q Hospital at present available for removing spectacles among the corneal surgeries.In this

procedure flap is not made manually but with the help of intralase laser and excimer laser is used for vision correction using customization.Therefore this procedure is considered as the safest and most precise and recovery is also faster as compared to other procedures.

The differences between these techniques are mentioned and described in table

OTHER SURGICAL OPTIONS AVAILABLE AT EYE Q HOSPITAL

 ICL (IMPLANTABLE COLUMNAR LENS)

• In case the person is not eligible for LASIK, then ICL is option for them

• LASIK is not suitable for the patients with

a. High power - myopia (more than 10D), hyperopia (more than 6D), & astigmatism (more than 5D)

b. Thin cornea- Minimum corneal thickness should be around 450 microns-500 microns depending upon patients profile

In ICL surgery, an artificial lens is placed in the eye, between natural eye lens iris of the eye to correct the vision.

NON SURGICAL OPTIONS AT EYE Q VISION HOSPITAL FOR VISION CORRECTION

Eye Q Vision Hospital has separate optical services for those patients who do not wish to undergo the surgery or for the patients who does not require surgery which provides the patients with two options:

1. EYE GLASSES/SPECTACLES

2. CONTACT LENSES

1. **Eye glasses**

Eye glasses are the cheapest and the safest method to treat refractive error. Eyeglasses help to correct the refraction thus enabling patients to function in day to day life. It

can be afforded by most of the patients and is considered most convenient way to deal with the refraction issues. Variety of frames is available including different shapes, sizes, material used, coverage and lens used. Optical sales executive recommend the frames according to the patient considering his age, type of work, daily routine and requirements.

 Frames are of three types viz: full frame, supra frame & rimless frame.

i. Full frames outline the whole lens. These are usually sturdy and usually recommended for higher prescription that requires thick lenses. Full frames are good options for students.

ii. Supra frames are also called semi rimless frames as they cover only upper portion of the frames and light weight and gives superior comfort. Since these the only upper part of the frames is covered and the rest is exposed, it is more susceptible to cracks.

iii. Rimless frames does not have any outer covering, it is made of temples and nose pads. These are the most light weight frames and the delicate ones.

 Materials used in frames – frames are made up of wide variety of materials ranging from plastic to metal to wood. Variety of frames nowadays are made up of either plastic or metal

 Plastic

i. Standard plastic – it is the most affordable material available made from petroleum based nylon. Standard plastic material is the most common glass material available in different shapes and colors.

ii. Acetate- Acetate is the plant based plastic manufactured in the form of sheets or molds. It is lightweight, flexible and its color remains vibrant over period of time. The price is higher but it is the more durable than any other plastic

material.

iii. TR90- TR90 is thermoplastic used in sports or protective eyewear. it is flexible , durable and impact resistant and hypo allergic.

 Metal

i. Monel – It is one of the most common metals used for glass frames. Highly cost effective and durable material and can withstand stress and heat without changing its shape

ii. Stainless Steel- It is a one of the popular metals available for glass frame. It remains corrosion resistant and durable. It is lustrous in appearance but may lose this quality with the period of time.

iii. Titanium- It is the premium quality metal used for eyeglass frame. One of the best quality is it is allergen free as all other metals contain nickel except for titanium .However , it is a costly affair.

 Lens used in glass frames are of three types : single vision lens, bifocal lens, progressive lens

i. Single vision lens-Single vision lens are the most common lens used for the vision correction. These are used for correcting one field of visionnearsightedness, far farsightedness ,or astigmatism. The entire lens will correct
the single field of vision with the same amount of correction.

ii. Bifocal lens- Bifocal lenses are mostly used for adults or elderly to correct the vision, as after 40 years of age , there is tendency to develop near vision . The bifocal lenses are used for correction 2 field of vision : near and farsightedness .

iii. Progressive lens-Progressive lenses are used to correct the multiple field of vision : near, far and everything in between (intermediate) . Therefore , it has advantage over bifocal lens in terms of lens adjustment

 Coatings used in lens- these are the optical lens enhancements used for improving the quality of vision.

i. Hard coat: Hard coat is the scratch resistant coating which extends durability of the lenses and increase the quality of vision. It is the protective lens coating, hard lacquer material is used for preventing the scratches.

ii. Anti reflective coating: It is the green coating that reduces the glare and gives more transparent and sharper vision . The coating is applied to lenses to reduce the reflection and gives clearer vision.It is ideal for many activities such as night driving, using screen.

iii. Transition : This type of coating is beneficial to those who are more exposed to UV rays. The photo-chromatic lenses change the color from clear to tint as the lens is exposed to UV rays.

iv. Blue cut : These are the special kind of lenses which blocks the high intensity blue light from gadgets such as computers, televisions, mobiles that are harmful for eyes.

v. Prevencia: Crizal Prevencia is the premium quality lens coating which provides the 8 benefits ; reduces glare,repels dust, repels water, repels smudge, resist scratches, provides UV protection, and protects from harmful blue light.

2. **Contact lens:**

Contact lenses can be a good alternative to the eye glasses that provide hassle free solution for crystal clear vision . These can be categorized into following types. All the contact lenses require the prescription of the opthalamologist.

i. Soft contact lenses: soft contact lenses are made up of soft & flexible plastic material to allow oxygen to pass through the cornea. It is available both as spherical as well as toric lens to treat myopia and hyperopia. The newer material

used in soft contact lenses is silicone hydro-gels to allow more oxygen to eyes while wearing these,

ii. “Semi soft contact lenses”: semi soft contact lenses are used when people are allergic to the soft lenses and to treat the astigmatism. These type of lenses are specially designed to match patient`s corneal contour.

iii. “Hard contact lenses(RGP lenses)”:Hard contact lenses are used for treating the refractive error and these provide more oxygen to the eyes for better eye functioning, Hard contact lenses are more durable than soft contact lenses. These are not generally tear easily and are scratch and smudge resistant.However it may take time to adapt to use of hard contact lens which varies from week and so on.

iv. “Extended wear contact lenses”:Extended contact lenses are designed for the overnight use or continuous use of lenses from one night to 6 night or upto 30

days . It depends upon the tolerability of the patient to use such kind of lenses. Generally these are made of soft flexible plastic and also rigid gas permeable are also available

v. Disposable contact lenses: Disposable contact lenses are describes as the use once and throw . Majority of soft lenses are disposable .

vi. “Ortho K lenses”: Ortho k lenses are specially designed rigid gas permeable lenses that are used for changing the corneal curvature to treat myopia.It has temporary vision correction effect. Patients must wear these lenses at night for 8 hours and they can go off without the lens in day time.

QUESTIONNARE

The (2) and (3) objective of the study is based on the survey to be conducted among the youth for assessing their awareness towards the LASIK surgery for refractive error and a structured questionnare was developed using questionnaire

A Survey is conducted among the youth population (18-35 years)those who have refractive error and wear either eye glasses or contact lenses. The technique used for sampling is convenience sampling The sampling size is 50 respondents.

An questionnaire is developed which consists of 13 questions each open ended and close ended questions, addressing the demographic analysis of the respondents which includes questions related to their age, gender, occupation , family income/income ; questions related to general eye health practices; questions addressing the awareness about the lasik and finally questions related to the attitude towards the lasik surgery. The survey contains questions about the factors that are responsible for not uptaking the lasik surgey for refractive error.Close ended questions are in the form of yes /no and multiple choices with the option of `other';open ended questions are added to cross check the answers of the respondents related to the closed ended questions.Email IDs were collected from the respondents and verbal consent was also taken before conducting the survey.

SURVEY QUESTIONNARE

Results

Q 1 What is your age?

Q 2 GENDER

(a) Male (b) Female (c)other

Q 3 What is your occupation?

(a) student (b) job (c) business

Q 4 Annual income/Family income?

(a) <5lacs (b) 5-10lacs (c) 10-15lacs (d)>15lacs

Q 5 Do you wear eye glasses or contact lenses?

Q 6 How often you visit the ophthalmologist?

(a) once in a 6 months

(b) once in a year

(c) (c) as and when require

Q 7 Are you aware of LASIK surgery for removing spectacles?

Q 9 Have you considered undergoing this procedure?

Q9 If YES, why?

(a) appearance (b) convenience over glasses (c)cost effective

(d) recommended by friend/family (e)work profession s.a sports (f) others

Q10 If NO, Why?

(a) fear of eye complications (b)unsure about safety (c) time constraints

(d) money constraints (e)comfortable with glasses (f) others

Q11 Are you aware about the side effects of LASIK?

Q12 If YES, Specify

Q13 Are you aware of any other treatment for removing spectacles?

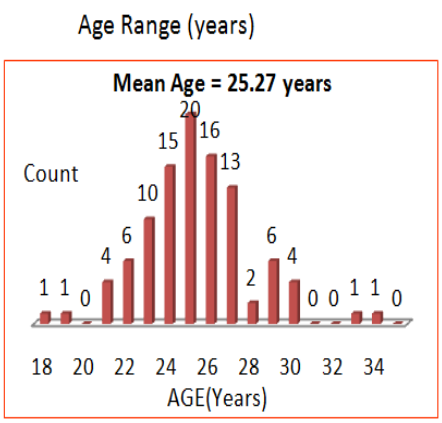
RESULTS

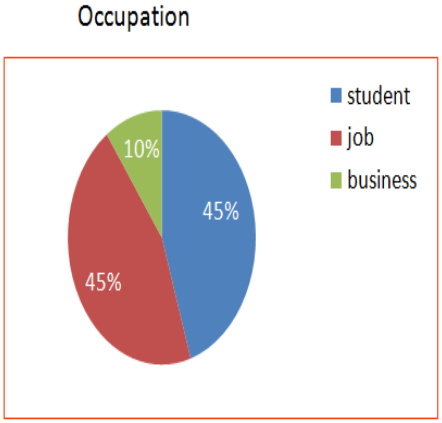
1. Demographic data of the respondents

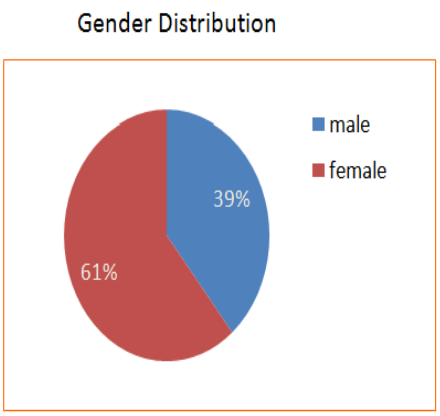
100 responses were received, out of which 61 % are females & 39 % males.

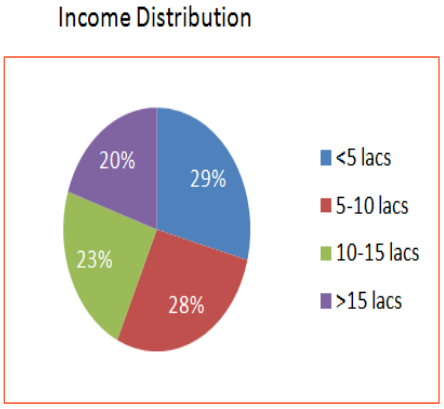
Age range was between 18-35 years with the mean age of 25.27 years.

45% of them are doing job, 45% are students and only 10 % are into business. Most of the respondents belong to income group <5lacs (29%) and between 5-10 lacs (28%),23% fall in the range of 10-15 lacs and only 20% fall in the category above 15 lacs income group.









2. Attitude towards general eye health practices.

Do you wear eye glasses, contact lenses?

Eye glasses (88%)

Contact lenses (12%)

How often do you visit ophthalmologist?

Visit ophthalmologist once in every 6 months (20%)

Visit ophthalmologist once in a year (35%)

Visit ophthalmologist as and when require (45%)

3. Attitude and awareness towards Lasik surgery.

Majority of the participants were aware about the possibility of Lasik surgery (86%) to remove eye glasses and only few were not aware(14%). 38% thinks

Lasik has possible side effects which they mention dry eyes, dryness, and reoccurrence of refractive errors in some cases, redness and irritation when exposed to light, eye infections, burning and migraine.

However, only 37% were willing to undergo the surgery.

Those who were not willing gave the reasons that they do not want and comfortable with specs (40%), fear of eye complications (27%), unsure about safety (24%) and for only few cost and time was the factor.

Attitude and awareness towards Lasik Yes No

Q Are you are aware about the possibility of Lasik to

remove spectacles?

86% 14%

Q Have you considered about undergoing Lasik for

removing spectacles?

37% 63%

Q Do you think Lasik has side effects? 38% 62%

Q Are you aware about any other treatment other than

LASIK?

17% 83%

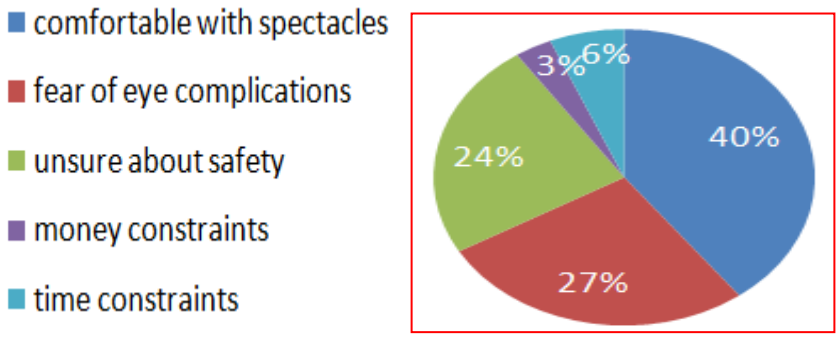
Awareness about the cost of Lasik surgery

22% participants' thinks that Lasik costs about 60-80 k, 21% thought that the cost is more than 80k, 15% thought between 40-60k, 21 %thinks Lasik costs about 20-40k and 13% have no idea. However, only 8% thinks Lasik is not a costly affair .

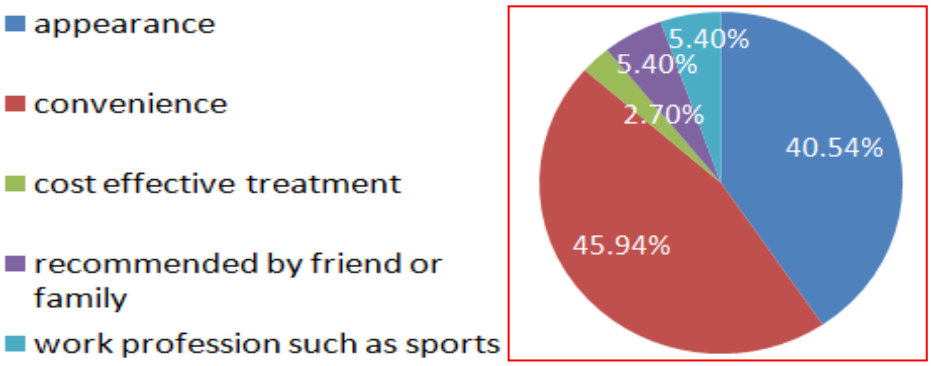
Factors for considering Lasik

Major factors among respondents who were willing for Lasik surgery for specs

removal were convenience over glasses (45.94%) and appearance (40.54%)



Factors for not considering Lasik



LASIK IS MORE POPULAR AMONG THOSE WHO FALL IN THE AGE RANGE OF MID TWENTIES.

Respondents who were considering undergoing the LASIK surgery, 56.75% fall in the age group 24-26 years with occupation as student or job with the 2 major factors convenience and appearance.

LASIK is considered more by female population than males.

Among those who were willing to undergo this procedure, majorities were the

females (72.97%) and only 27.02% were males. 48.14 percent females listed appearance as the major factor and 48.14 percent females considered Lasik for convenience over glasses and for 3.7 percent recommendation by friends and family was the factor.

Also, out of total contact lens wearers, 75% are females and out of these 75percent females, 53.7 percent listed appearance as the factor.

DISCUSSION

Awareness in the study does not mean that subjects had a complete knowledge about the Lasik but they have heard about the same.

There was no inclusion criteria except for the age group (18-32 years) which is the eligibility criteria for the Lasik surgery.

Most people in the study wear eye glasses (88%) and only 12 % wear contact lenses out which 9%were females who willing to undergo the Lasik surgery listing appearance as the factor .

Majority of them are aware and heard about the LASIK for removing spectacles and were much aware of cost for the procedure (86%). However , but the attitude towards undertaking the surgery was negative due to possible side effects and fear of complications and some were comfortable with spectacles.

There are many advances taking place globally to treat refractive error in alternatives to spectacles.

This study determined the awareness and attitude among the youth about spectacles removal surgery and the poor interest of respondents towards the alternatives of spectacles for correcting the vision.

“This study found relatively high level of awareness” among the youth about the alternative options but they were not keen to undertake those options. The

participants' poor interest and attitude towards up taking the Lasik in alternative to the glasses were borne out of the fact there were fear of complications and side effects which make them reluctant; cost was not the barrier considering the income group they fall into.

The study revealed the need for popularizing the alternatives such as Lasik for correcting the refractive error as some people do not wear glasses because appearance matters them the most or because of their professions such as sports, acting, modeling . In any of such cases, LASIK would help to reduce the magnitude of the refractive error as untreated refractive could become the cause of blindness.

RECOMMENDATIONS

 Counseling sessions should be conducted in which patients must be counseled about the lower risk rate and better technology.

 Testimonials and videos can be used as tool for counseling.

 Marketing strategies should be made which targets female population, those who are in sports, those falling in the age range of 24-26 years.

LIMITATIONS

 The major limitation was that due to COVID 19 PANDEMIC, no specific project was assigned.

CONCLUSION

The study demonstrated that the LASIK is a popular surgery , therefore it has a higher scope to treat the refractive errors than the other options available.

The opportunities are high and mostly revolved around female population, those who are appearance conscious, athletes and people who are into sports, young people

whose profession is modelling or acting.

The opportunities must be grabbed as these people tend to avoid spectacles and lasik is the most suitable treatment for them.

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