EFFECTIVE OF CATARACT SURGERY ON ANTERIOR CHAMBER PARAMETERS INCLUDING INTRAOCULAR PRESSURE USING OPTICAL COHERENCE TOMOGRAPHY AND A-SCAN BIOMETRY

By

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Dissertation submitted to

BLDE (Deemed to be University) Vijayapura, Karnataka

In partial fulfillment of the requirements for the degree of

MASTER OF SURGERY

In

OPTHALMOLOGY

Under the guidance of

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BLDE (Deemed to be University)

SHRI B.M.PATIL MEDICAL COLLEGE

HOSPITAL & RESEARCH CENTRE, VIJAYAPUR

KARNATAKA

2020

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LIST OF ABBREVIATIONS

AC	Anterior chamber
IOP	Intra Ocular Pressure
AS-OCT	Anterior Segment Optical Coherence Tomography
GAT	Goldman's Applanation Tonometer
ACA	Anterior Chamber Angle
ACD	Anterior Chamber Depth
AOD	Angle Opening Distance
TISA	Trabecular Iris Space Area
A scan	Amplitude Scan
MSICS	Manual Small Incision Cataract Surgery

ABSTRACT

BACKGROUND:

Post cataract surgeries, there are many biometric changes to the eyeball, which may vary from person to person.

It has been documented that some post-cataract surgery patients have a reduction in their intraocular pressure.

It has also been documented that the anterior chamber depth commonly increases after undergoing cataract surgery.

A few studies have been undertaken to quantify and assess these changes on anterior chamber parameters in an eye that undergoes cataract surgery.

There is a need to quantify the degree of these changes in anterior chamber parameters, including the Anterior chamber Depth (ACD), Anterior Chamber Angle (ACA), Angle Opening Distance (AOD), Trabecular Iris Space Area (TISA) Index, and Intra Ocular Pressure (IOP).

AIM & OBJECTIVES

To study the changes in anterior chamber parameters including intraocular pressure after cataract surgery and to compare the degree of changes before and after cataract surgery.

MATERIALS & METHODS

This is a longitudinal study and time-bound study carried out on the patients undergoing cataract surgery in the Ophthalmology Department at Shri B.M. Patil Medical College, Hospital and Research Center, B.L.D.E. University, Vijaypura.

This study includes a total of 254 patients undergoing cataract surgery.

They will undergo evaluation of the anterior chamber parameters like Anterior Chamber Angle (ACA), Angle Opening Distance (AOD), Trabecular Iris Space Area(TISA), Lens Vault using Anterior Segment Optical Coherence Tomography, Anterior Chamber Depth(ACD) and Lens Thickness using A-Scan Biometry and Intra Ocular Pressure using Goldman's Applanation Tonometer.

They were re-evaluated after four weeks of the post-operative period for the changes in the anterior chamber parameters.

RESULTS

A total of 254 patients were included in the study among which 154 were female and 100 were male. All the parameters under the study showed statistically significant changes between their pre- and post-surgical values. The ACD, ACA, AOD500, and TISA500 showed significant increase and the IOP showed significant decrease in between the pre - and post-surgical levels.

The ACD, ACA, AOD500, TISA500 showed increase by 1.5 mm, 10.5 degrees, 0.25 mm, 0.10 mm2 respectively and IOP showed a decrease by 3.9 mm Hg.

CONCLUSION

The AS -OCT is an effective and non-invasive method to study the anterior chamber parameters. The measurements obtained from this study shows that post-cataract surgery, the anterior chamber parameters like ACD,ACA,AOD500, and TISA500 increased significantly while there was a significant reduction noted in the IOP.

INTRODUCTION

Cataract is the leading cause of blindness and is the cause for half of the blindness worldwide [8]. Cataract surgery is the most common ocular surgery done across worldwide.

The crystalline lens's ageing is the primary cause of cataracts. The lens is unique in that it is one of the few body structures that continues to grow throughout life because new lens fibres are continuously laid down in the crystalline lens and existing ones are not replaced. The micro structure and chemical components of the lens, as well as other interrelated variables that contribute to its optical homogeneity, keep it transparent. Yellow-brown pigment gradually builds up inside the lens with ageing, reducing light transmission. The regular design and arrangement of the lens fibres, which are required to preserve optical clarity, are disrupted as a result of structural alterations to the lens fibres. [16]

Extrinsic variables influencing cataract development are influenced by regional and socioeconomic disparities. Numerous causes, including nutrition, acute infections that cause dehydration in children, and excessive sun exposure, seem to be significant in the poor countries. Young individuals in many poor nations regularly acquire cataracts, which are usually linked to atopic dermatitis and the medications used to treat it, as well as to diabetes. Congenital diseases and other types ocular trauma, such as direct puncture, contusion, radiation, electrical, or metabolic stress, are additional causes of cataract.

It has been shown that the anterior chamber deepens and the angle widens following cataract surgery.

Although the anterior chamber is clinically evidently deepened and the iridocorneal angle is clinically evidently widened after cataract surgery and intraocular lens (IOL) implantation, measurement of these alterations has been hampered by the lack of tools and methods to measure them.

According to earlier research by Kurimoto et al employing A-scan ultrasonography or UBM, phacoemulsification with or without the implantation of Intra Ocular Lens leads to the broadening of ACA and to the deepening of anterior chamber of both healthy and glaucoma patients. Additionally, it has been shown that these modifications are accompanied in these eyes by notable drops in intraocular pressure (IOP).

The other studies conducted in quantifying the anterior chamber morphometry have used varying modes of examinations such as Ultrasound Bio Microscopy and Pentacam.

REVIEW OF LITERATURE

The main factor influencing the development of cataracts is heredity. Up to 70% of cataract occurrences can be attributed to genetic factors. Through case studies, family studies, and twin studies, the influence of genetics has been demonstrated time and time again. It is known that heritability has a significant role when it comes to the onset of aging-related nuclear and cortical opacities in addition to congenital cataract. Numerous research that looked at nuclear cataract risk associated with smoking have evaluated the findings of previous investigations. A strong association, a clear dose-response relationship, and a lesser cataractogenic impact in former smokers compared to current smokers were shown.

The occurrence of cortical cataract has been directly linked to lifelong exposure to UV light, according to several researches.A 10% cortical cataract risk in the general population is associated with sun exposure. According to WHO estimates, exposure to UV radiation may be a factor in 20% of cataract-related blindness worldwide. Using a wide-brimmed headcap, Ultra Violet-B protective eyewear, along with staying out of the sun during peak UV-B radiation hours have all been recommended as effective main preventative measures for cortical cataract. Clinical investigations supported the higher frequency and earlier development of cortical and posterior subcapsular type of opacities in diabetes individuals. It has been claimed that diabetes causes roughly 4% of all cataract cases. With the exception of likely reversibility, diabetes met all epidemiological criteria for causation as a risk factor for cataract. Numerous investigations have shown that topical and systemic steroids both significantly increase the likelihood of developing posterior subcapsular cataracts. It has also been demonstrated that steroid inhalation increases the risk of cataract.[17]

The most frequent preventable cause of blindness continues to be cataract. The reported coverage of cataract surgery is limited, and the poor visual results call for improvement. Although phacoemulsification is the favoured method for cataract surgery in industrialised nations, its adoption in less developed nations may provide difficulties. Given that it has been demonstrated that manual suture less small incision extracapsular cataract surgery produces results that are comparable to phacoemulsification, this alternative surgical approach is growing in favour.

Treatment for cataract blindness remains a daunting task on a global scale. Cost, a lack of community education, a shortage of experienced professionals, and subpar surgical results are all significant obstacles. Although both phacoemulsification and manual small incision extracapsular cataract surgery produce good visual results with low complication rates, manual small incision extracapsular cataract surgery is noticeably quicker, less costly, and technologically less complex. The preferable method for cataract surgery in the developing world may therefore remain manual small incision extracapsular surgery.[18]

Both the procedures and results of cataract surgery have undergone major improvements during the past three decades. Currently, smaller incisions are the norm, and most surgeons favour the phacoemulsification procedure. These developments have led to better intraocular lens designs and materials especially those that lend themselves well to utilisation with small incisions. The idea of removing the cataractous lens through phacoemulsification was first proposed more than 20 years ago. Thanks to technical and equipment developments that have increased its effectiveness and safety, phacoemulsification is now significantly more often employed and approved. The success of this revolutionary technology was largely due to the combination of modern phacoemulsification methods and the creation of viscoelastic molecules. As a result of better surgical techniques for the removal of anterior capsule of lens, both intraoperative and postoperative capsular problems have decreased. Currently, the posterior chamber rather than the anterior chamber is used for nucleus removal since it harms the corneal endothelium less. Many wounds may now be left unstitched because to advancements in wound design, and smaller wounds allow for quicker healing times as well as improved intraoperative control and safety. Even though their optic diameters are smaller, lower implantable lenses can nonetheless maintain proper centration. Foldable intraocular lenses may be used with the smaller incision, hastening the process of eyesight recovery even further. The continuing advancement of this technique promises to improve cataract surgery patient outcomes even further.

Advantages of Phacoemulsification

Phacoemulsification has a number of benefits since it enables a smaller incision. Because of the tight seal that is made around the handpiece during surgery, the anterior chamber may be kept under excellent control. This is crucial for individuals whose coughing or activity could have otherwise caused the anterior chamber to significantly shallow. The surgeon can keep the intraocular pressure (IOP) within a normal range by controlling the anterior chamber.

Phacoemulsification has added advantages like the absence of the requirement of sutures, reduced hospital stay etc.

Disadvantages of Phacoemulsification

Given how much phacoemulsification depends on technology, many surgeons who perform extracapsular or intracapsular cataract extraction may find the procedure daunting. The learning curve and complication rate may be very steep when a surgeon first starts using the phacoemulsification procedure. However, with the right patient selection and thorough evaluation procedures by a skilled phacoemulsification surgeon, problems can be significantly decreased.

Comparable results to phacoemulsification are provided by manual small Incision cataract surgery (MSICS), which also has the advantages of being more widely applicable, takes lesser time, having smaller learning period, and being less expensive. SICS may be carried out in high-volume installations because to its quick methodology. With extracapsular cataract extraction (ECCE) having an incision length of 10 mm and intracapsular cataract extraction (ICCE) having a 12 mm incision, MSICS has an incision size of 6-7 mm, and phacoemulsification has an incision size of about 2.8 mm. For both the patient and the physician, a smaller incision offers obvious advantages., including quicker recovery, better intraocular pressure management, and little to no postoperative astigmatism and problems. An incision with no sutures and self-sealing has been taken into account in the MSICS basic procedure.

For many contexts in the developing countries, MSICS is a more affordable and financially viable solution. The most suitable technique for doing frequent cataract procedures, especially in poor nations, is MSICS because of its high efficacy.[20]

It is well established that cataract surgery extends and deepens the anterior chamber of the operated eye. However, it has been challenging to quantify these changes due to technological issues. The techniques of Shaffer, Scheie, or Von Herick are frequently used to determine the anterior chamber angle, however because they rely on the subjective judgement of the observer, they lack objectivity and accurate quantitative measurement[1]. For a quantitative assessment of the anterior chamber structure, Imaging of the anterior segment in cross-section is essential. Scheimpflug camera and modified standard B-scan ultrasonography are two improved approaches for assessing the anterior chamber angle, but they are not frequently utilised in clinical settings because they are either excessively complex or have low resolution.

The feasible technique of ultrasound bio microscopy, created in 1990 by Pavlin and colleagues, offers accurate quantitative assessments of anterior chamber architecture in vivo. Ultrasound-bio microscopy (UBM) penetrates opaque medium and produces higher-resolution pictures of the anterior segment. The iridotrabecular angle along with the ciliary body may be seen in great detail with UBM; these features are not visible with a gonioscope. UBM has a resolution that is far greater than that of traditional ultrasound. However, although its quantitative measures were shown to have acceptable intraobserver repeatability, Inter-observer repeatability was poor, and it was suggested that observer experience affected the measurements. [2]. The UBM transducer, however, necessitates that examined eye to be submerged in a saline water cup while the patient is positioned as supine; the technique requires an experienced examiner and is uncomfortable for the person undergoing the examination.

A slit beam and a camera are used in the reproducible and non-intrusive technique known as scheimpflug photography. However, photographs must be processed in order to allow for the display of the true angle recess due to the material's optical and acoustic properties..

An innovative non invasive and non-contact imaging method for the anterior segment has recently emerged: anterior segment optical coherence tomography (AS-OCT). By using light with a long wavelength (1,310 nm), AS-OCT produces high resolution pictures and allows for quick and simple quantitative investigation of diverse structures. Low intra-observer and inter-observer variability has been seen with AS-OCT, which has demonstrated strong repeatability and reproducibility. [3] It is challenging to produce precise pictures of the lens, the zonules and the ciliary body behind the pigmented iris due to inadequate penetration of ASOCT through the pigmented iris epithelium.

It is also a known fact that the intraocular pressure also reduces post cataract surgery. There is a need to assess the relationship demonstrated between the pre operative and post operative IOP and to quantify the changes.

OCT

The non-invasive, high-resolution optical imaging technique known as optical coherence tomography (OCT) is based on the interference of a signal coming from the object being studied and a nearby reference signal. An object's cross-section, or a two-dimensional picture in space, may be created via OCT in real time.

Since the optical source in OCT mostly determines the axial resolution, it is possible to photograph the human retina with at least a hundred times greater resolution than is possible with confocal microscopy.

An interferometer and an optical source are components of a TD-OCT system. A reference beam is created using an optical splitter and a reference mirror. The interference of light between the reference beam and the beam that the object returns, as well as the computation of the interference signal and its evaluation, are all performed by a processing unit. Light is transported through a Microscopy Interface optics from the Splitter to and through the Object to be analysed up towards the Processing Unit. The object route length is defined as "the distance travelled by the object wave between the splitter and the object and back". The reference route length is "the distance that the reference wave travels from the Splitter to the Reference Mirror and back". "OPD =|object path length - reference path length| is how the interferometer defines an optical path difference (OPD)".

A Broadband optical source and a Photodetector are both used in TD-OCT setups. The OPD must be smaller than the broadband source's coherence length, cl, then only will the Photodetector detect fluctuations in the interference result according to the partial coherence interferometry theory of operation.

Using an UBM, **KURIMOTO et al**. determined in their study that phacoemulsification either with or without implantation of Intra Ocular Lens makes the Anterior Chamber Angle broader and the anterior chamber deeper in both healthy and glaucomatous eyes. Additionally, it has been shown that these variations are accompanied with considerable drops in intraocular pressure in such eye. [1]

Kim et al in their study concluded that the anterior chamber deepens and the angle of the anterior chamber increases in width after successful phacoemulsification an PCIOL implantation in eyes diagnosed with glaucoma. Their findings provide quantitative values of angle parameters using anterior Segment OCT [4] .

Martha kim et al by their research concluded that the anterior chamber depth and the angle increased significantly post cataract surgery. They also suggested that the Anterior Segment Oct can be used as a method of assessing the anterior chamber parameters [3] . their study pointed towards the feasibility of AS OCT as the modality to assess the anterior chamber and its different parameters.

Wonseok lee et al in their study about changes in anterior chamber morphometry after cataract surgery in patients with normal tension glaucoma concluded that the angle parameters significantly raised post cataract surgery along with a marked decrease in the intraocular pressure. They also commented that the changes in anterior segment parameters like AOD, Angle-Recess-Area, TISA were linearly correlating with the decrease in the intra ocular pressure. They concluded that the in Normal Tension Glaucoma, cataract surgery may just have increased the anterior chamber metrics and lowered IOP. [5]

Besides the IOP before the surgery and the thickness of the lens, Hung sueng yang's study found that variables such variations in total area of the anterior chamber and the AOD were substantially linked with lower Intra Ocular Pressure following phacoemulsification. Their findings showed a strong relationship between IOP change and pre-operative Intra Ocular Pressure, thickness of the lens, AOD changes, and the changes in the total area of the anterior chamber**.** Their study also noted that the Intra Ocular Pressure significantly falls after cataract surgery.[6]

Ken Hyashi et al in their study, which was conducted in Japan examined the differences in ACA and ACD following intraocular lens implantation in angle closure glaucoma (ACG), open angle glaucoma (OAG), and eyes without glaucoma or ocular hypertension. They used a Scheimpflug video-photography system in their study and their findings suggested that after cataract removal and intraocular lens implantation, the Anterior Chamber Angle depth and breadth in eyes with angle closure glaucoma increased significantly and matched those of eyes with open angle glaucoma and normal eyes, which may have contributed to the postoperative drop in IOP. Angle breadth and depth in any of the three groups did not significantly alter following surgery. [7]

Ufuk Elgin et al in their study titled "Early Postoperative Effects of Cataract Surgery on Anterior Segment Parameters in Primary Open-Angle Glaucoma and Pseudo exfoliation Glaucoma", compare the effect of cataract surgery on anterior chamber parameters in primary open-angle glaucoma and pseudo exfoliation glaucoma using optical biometry. They concluded that Cataract surgery may cause change in Intra Ocular Pressure and anterior segment parameters like Anterior Chamber Depth and Central Corneal Thickness postoperatively in eyes with Primary Open Angle Glaucoma and Pseudo exfoliation Glaucoma and these changes may differ between these two types of glaucoma.[8]

Another study conducted in China tittled "The change of anterior segment parameters after cataract surgery using swept-source optical coherence tomography in patients with normal-tension glaucoma**" ,** Using swept-source optical coherence tomography, the author studied how the AC angle morphology changed following surgery for cataract in individuals with normal-tension glaucoma and how this affected intraocular pressure. The author concluded that the patients who underwent cataract surgery had improved anterior chamber parameters and that there was a significant drop in the intra ocular pressure , more so in the normal tension glaucoma group.[9]

In a study onducted by Naoki Tojo et al, which evaluated the intra ocular pressure fluctuations over a twenty-four-hour period were assessed using a contact Lens Sensor before and at three months after undergoing cataract surgery in Primary Angle Closure Glaucoma patients. Their data revealed that post cataract surgery, the intra ocular pressure fluctuations decreased during the night time and suggested that cataract surgery might partially prevent the progress of primary angle-closure glaucoma.[10]

Dooley et al in their research titled "Changes in intraocular pressure and anterior segment morphometry after uneventful phacoemulsification cataract surgery", measured the Anterior Chamber Depth, Anterior Chamber angle, Anterior Chamber Volume, Central Corneal Thickness, And IOP normotensive eyes. They concluded that all the anterior chamber parameters increased significantly and IOP decresed in eyes that underwent cataract surgery.

Yen C et al in their study evaluated Intra Ocular Pressure changes post-cataract surgery in eyes with Open Angle Glaucoma and its associations to AS parameters using an Anterior Segment OCT. The data from their study concluded that in eyes of Open Angle Glaucoma patients, in the eyes with shallower angles, the Intra Ocular Pressure reduction following cataract surgery was larger. IOP decrease was predicted by preoperative IOP, angle-opening distance, and lens vault.[12]

Bilak et al in their study "Biometric and Intraocular pressure change after cataract surgery" evaluated the variations in ocular morphometry and intra ocular pressure by Applanation Tonometry post-cataract surgery concluded that anterior segment morphology and parameters changes and IOP reduced post phacoemulsification.[13]

In the study titled" Anterior chamber parameters measured by the Pentacam CES after uneventful phacoemulsification in normotensive eyes" **Ozlenen et al** quantified the Anterior Chamber Volume, Anterior Chamber Angle and Anterior Chamber Depth using pentacam in eyes undergoing cataract surgery. Their results showed that three months after an uncomplicated phacoemulsification and IOL implantation, the ACV, ACD, and ACA all rise in eyes with previously normal IOP which had open iridocorneal angles, while ACA expands in all quadrants. IOP immediately following these adjustments drops significantly. [14]

Farnaz Memarzadeh et al, in their study collected the pre operative and post operative ACD , AOD500,TISA500 in cataract surgery patients and compared the data to analyze the changes in anterior chamber parameters. They used an Anterior segment OCT for their study and concluded that Anterior segment OCT can be used to visualise and quantitatively measure changes in angle morphology following cataract surgery. [15]

MATERIALS AND METHODS

TYPE OF STUDY: Longitudinal study

DURATION OF STUDY: JANUARY 2021-JULY 2022

7 SOURCE OF DATA:

The study will be carried out on the patients undergoing cataract surgery at Ophthalmology Department, Shri B.M. Patil Medical College, Hospital and Research Center, B.L.D.E. University, Vijayapura during the period of JANUARY 2021-JULY 2022.

METHOD OF COLLECTION OF DATA:

This is a longitudinal study and time-bound study that was carried out on the patients undergoing cataract surgery in Ophthalmology Department, Shri B.M. Patil Medical College, Hospital and Research Center, B.L.D.E. University, Vijayapura.

This study includes a total of 254 patients who underwent cataract surgery.

They underwent detailed history taking and slit lamp evaluation and before being posted for the cataract surgery.

HISTORY

All patients had a thorough history check that included the length of the symptom, its type, any previous ocular trauma, any past medical or surgical history, any past use of cigarettes or alcohol, and any past history that would have indicated uveitis.

OCULAR EXAMINATION

Snellen's charts were used to measure visual acuity, and refractive state was recorded.

- Slit lamp biomicroscopy was used to examine the anterior segment.
- A Goldmans Applanation Tonometer was used to assess intraocular pressure.
- Dilated fundus examination using 90D & indirect ophthalmoscopy before the admission for cataract surgery
- They underwent assessment of the anterior segment morphometric parameters like Angle Opening Distance (AOD), Trabecular Iris Space Area (TISA), Anterior Chamber Angle (ACA) and Lens Vault using Anterior Segment Optical Coherence Tomography. The patients were explained about the procedure being done. The OCT scan was taken with patient in sitting position

- Anterior Chamber Depth (ACD) and Lens Thickness using A-Scan Biometry. The patients were explained about the procedure being done and the need for it. Proparacaine eye drops 0.5% were instilled on the examined eye and the patient was advised to close their eye for 5 minutes. The procedure was done once proper anaest hesia was confirmed.

INVESTIGATIONS

Relevant blood investigations like Random Blood Sugar, HIV and HBsAg viral markers were taken.

The patients were explained about the study, institutional clearance and patients' wilful consent was taken. Details of the patients including history, clinical examination, investigations were recorded.

On the time of discharge from the hospital post-surgery, the patients are advised about the schedule for the review. They were re-evaluated after four weeks of the post-operative period for the changes in the anterior chamber parameters.

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- **SAMPLING:**

- The anticipated mean difference (pre-and post-operative) of Nasal ACA in cataract patients 11.95 ± 5.30 resp. [(4)] the required minimum sample size is 254 to achieve a power of 80% and a level of significance of 5% for detecting a true difference in means between pre and post operations.

Z_α = Standard normal deviate for α = 1.9600.

Z_β = Standard normal deviate for β = 0.8416.

$B = (Z_\alpha + Z_\beta)^2 = 7.8489$.

$C = (E/S_\Delta)^2 = 0.0324$.

N = B/C = 245.

N=minimum 254

Statistical Analysis

- The data obtained was entered in a Microsoft Excel sheet, and statistical analysis performed using the statistical package for the social sciences (Version 20).
- Results were presented as Mean±SD, counts and percentages, and diagrams.
- For normally distributed continuous variables between pre- and post-operative data were compared using paired t-test
- For not normally distributed variables, the Wilcoxon sign rank test was used.
- Categorical variables between the two groups were compared using the Chi-square test.

- Correlation between the variables were analysed using Pearson's/Spearman's correlation.

•. $p<0.05$ was considered statistically significant.

- All statistical tests were performed two-tailed.

- **INCLUSION CRITERIA:**

Patients who underwent cataract surgery, either Phacoemulsification or Small Incision Cataract Surgery at B.L.D. E Shri B.M.Patil medical college with age above 40 years.

- **EXCLUSION CRITERIA:**

  - ✓ Any patient with the history of ocular trauma.
  - ✓ Any patients with a history of previous ocular surgery in the eye undergoing cataract surgery.
  - ✓ Patients with any ocular complications.
  - ✓ Paediatric patients.
  - ✓ Patients with raised intraocular pressure

- ✓ Patients on medications that reduce intraocular pressure like timolol, latanoprost, dorzolamide, etc.
- ✓ Patients who are not willing for OCT procedures.
- ✓ Patients who are not willing for tonometry.
- ✓ Diabetic and hypertensive patients.

RESULTS

Comparison of ACD (mm) pre and post operatively

Comparison of	Pre operation		Post Operation		Wilcoxon Signed Ranks Test	P VALUE
	Mean	Std. Deviation	Mean	Std. Deviation		
ACD (mm)	2.69	0.465	3.996	0.112	13.817	0.0001
Statistically significant						

Comparison of ACA(degrees) pre and post operatively

Comparison of	PRE-OPERATIVE		POST OPERATIVE			
	Mean	Std. Deviation	Mean	Std. Deviation	Wilcoxon Signed Ranks Test	P VALUE
ACA (degrees) NASAL	27.80	2.69	28.32	2.10	13.816	0.0001
ACA (degrees) TEMPORAL	28.32	2.10	38.30	1.77	13.816	0.0001
STATISTICALLY SIGNIFICANT						

Comparison of AOD500 (mm) pre and post operatively

Comparison of	PRE-OPERATIVE		POST OPERATIVE			
	Mean	Std. Deviation	Mean	Std. Deviation	Wilcoxon Signed Ranks Test	P VALUE
AOD500(mm) NASAL	0.445	0.066	0.679	0.074	13.816	0.0001
AOD500 (mm) TEMPORAL	0.439	0.0.71	0.692	0.076	13.816	0.0001
STATISTICALLY SIGNIFICANT						

Comparison of TISA500(mm2) pre and post operatively

Comparison of	PRE-OPERATIVE		POST OPERATIVE			
	Mean	Std. Deviation	Mean	Std. Deviation	Wilcoxon Signed Ranks Test	P VALUE
TISA500(mm2) NASAL	0.135	0.009	0.238	0.011	13.817	0.0001
TISA500 (mm2) TEMPORAL	0.0.135	0.010	0.0.237	0.011	13.817	0.0001
STATISTICALLY SIGNIFICANT						

Comparison of IOP(mm Hg) pre and post operatively

Comparison of	Pre operation		Post Operation		Wilcoxon Signed Ranks Test	P VALUE
	Mean	Std. Deviation	Mean	Std. Deviation		
IOP (mm Hg)	16.6	2.4	12.7	2.07	13.813	0.0001
Statistically significant						

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Wilcoxon Signed Ranks Test

Paired Samples Statistics

		Mean	Std. Deviation
Pair 1	ACD (in mm)	2.69	0.465
	ACD	3.996417	0.1117634
Pair 2	ACA(degrees) NASAL	27.801181	2.6974806

	ACA-nasal	38.040551	2.3125985
Pair 3	ACA(degrees) TEMPORAL	28.326	2.1076
	ACA-TEMPORAL	38.303150	1.7694794
Pair 4	AOD 500(mm) NASAL	0.445390	0.0668935
	AOD 500 NASAL	0.679941	0.0740871
Pair 5	AOD 500(mm) TEMPORAL	0.439622	0.0711047
	AOD 500 TEMPORAL	0.692083	0.0706776
Pair 6	TISA500(mm2) NASAL	0.135307	0.0098731
	TISA500 NASAL TISA500 TEMPORAL	0.238744	0.0112718
Pair 7	TISA500(mm2) TEMPORAL	0.135783	0.0105772
	TISA500TEMPORAL	0.237630	0.0113453
Pair 8	IOP(mm Hg)	16.648031	2.4725481
	IOP	12.714173	2.0753865

NPar Tests

Wilcoxon Signed Ranks Test

Test Statistics

	ACD - ACD(in mm)	ACA-nasal - ACA(degrees) NASAL	ACA-TEMPORAL - ACA(degrees) TEMPORAL	AOD 500 NASAL - AOD 500(mm) NASAL	AOD 500 TEMPORAL - AOD 500(mm) TEMPORAL
Z	-13.817	-13.816	-13.816	-13.816	-13.816
Asymp. Sig. (2-tailed)	.000	.000	.000	.000	.000

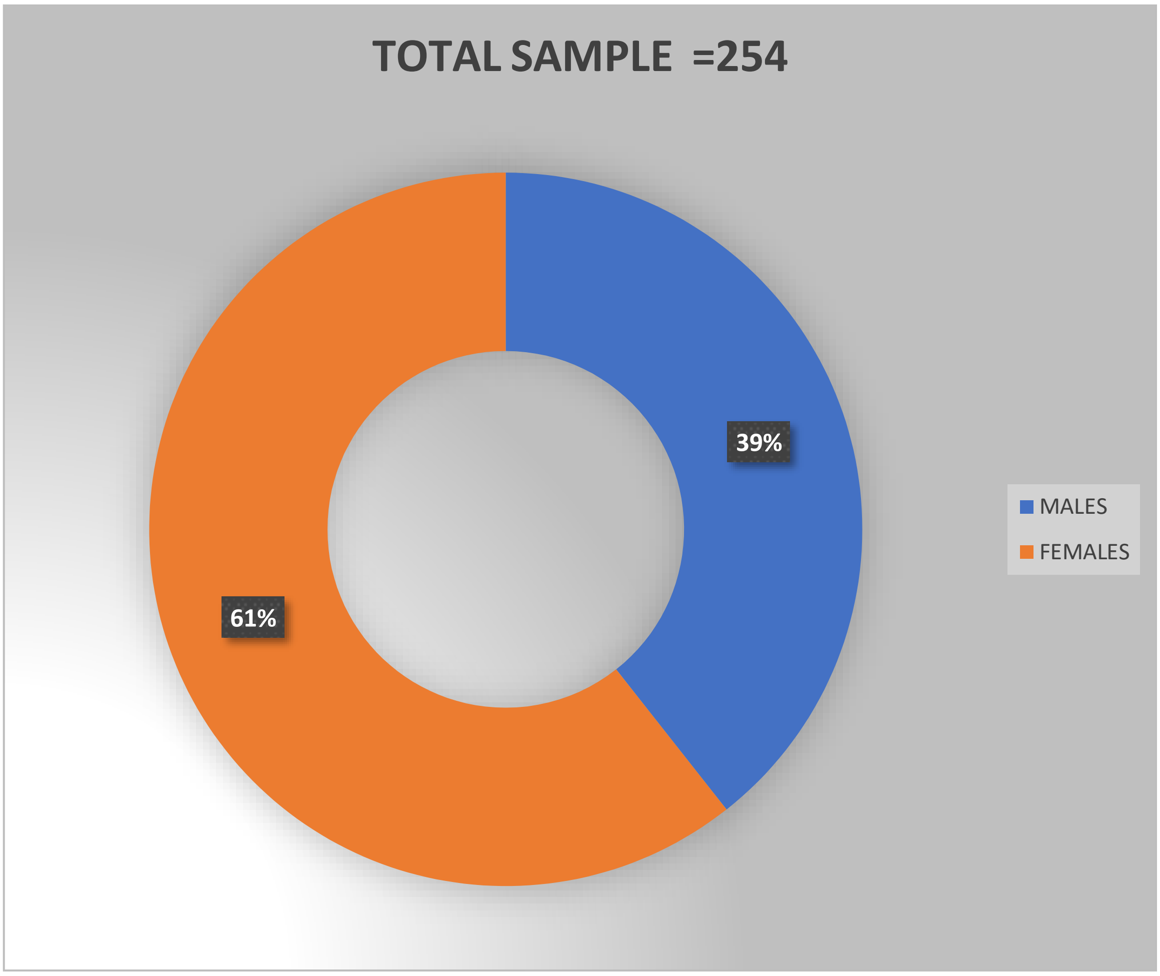
Test Statistics

	TISA500 NASAL TISA500 TEMPORAL - TISA500(mm2) NASAL	TISA500TEMPORAL - TISA500(mm2) TEMPORAL	IOP - IOP (mm Hg)
Z	-13.817	-13.817	-13.813
Asymp. Sig. (2-tailed)	.000	.000	.000

- A total of 254 patients were included in the study among which 154(60.63%) were female and 100 (39.33%) were male
- The pre operative ACD was 2.65 +/- 0.46 mm which increased to 3.99 +/- 0.11 mm post operatively.
- The pre operative ACA was 27.8+/-2.69 degrees nasally and 28.32 +/- 2.10 degrees temporally which increased to 38.04 +/- 2.31 degrees

and 38.30 +/- 1.77 degrees respectively post operatively

- Pre operatively the AOD500 was noted as 0.445 +/-0.067 mm nasally and 0.439 +/-0.071 mm temporally which showed an increase to 0.679 +/- 0.074 mm and 0.692 +/- 0.076 mm respectively
- The preoperative values of TISA500 were 0.135 +/- 0.009 mm2 nasally and 0.135 +/- 0.010 mm2 temporally which showed an increase to 0.238 +/- 0.0112 mm2 nasally and 0.237 +/- 0.011 mm2 temporally in the post operative evaluation
- The IOP showed a significant reduction from 16.6 +/- 2.4 mm Hg pre operatively to 12.7 +/- 2.0 mm Hg post operatively


TOTAL SAMPLE =254
39%
61%
MALES
FEMALES

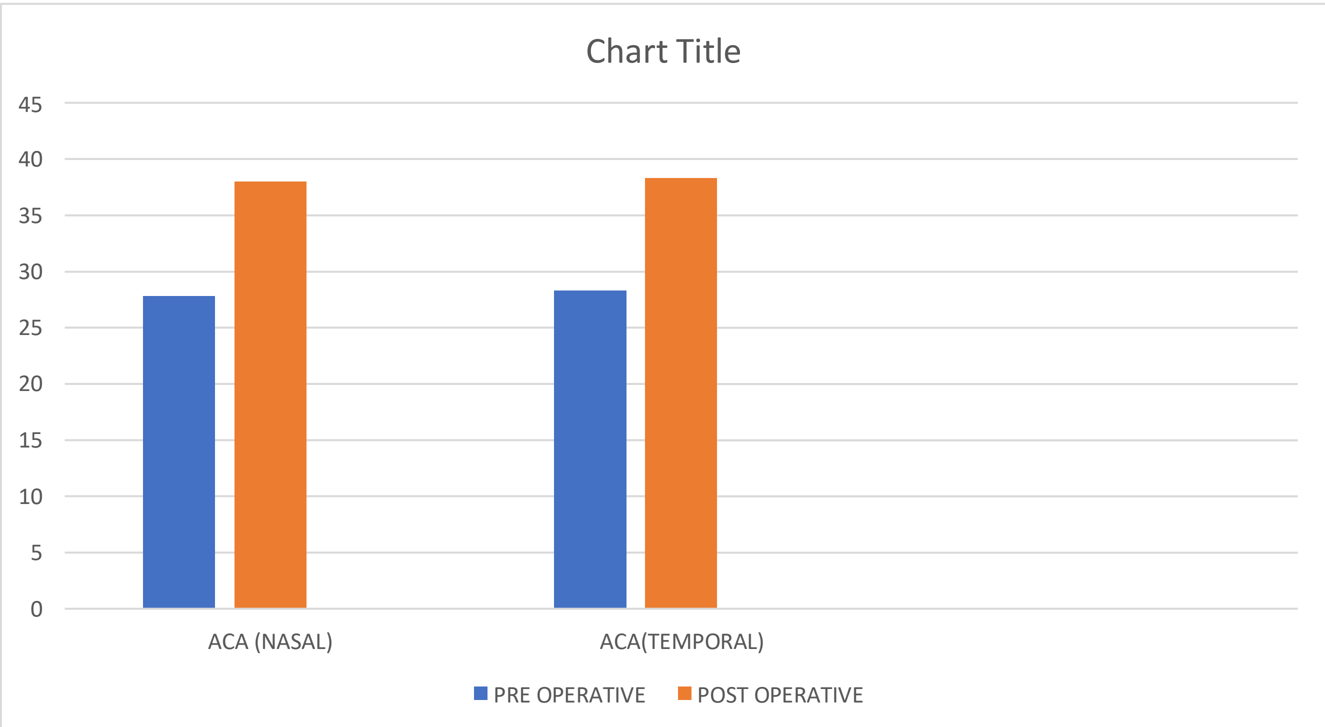


Chart Title
45
40
35
30
25
20
15
10
5
0
ACA (NASAL)
ACA(TEMPORAL)
PRE OPERATIVE
POST OPERATIVE

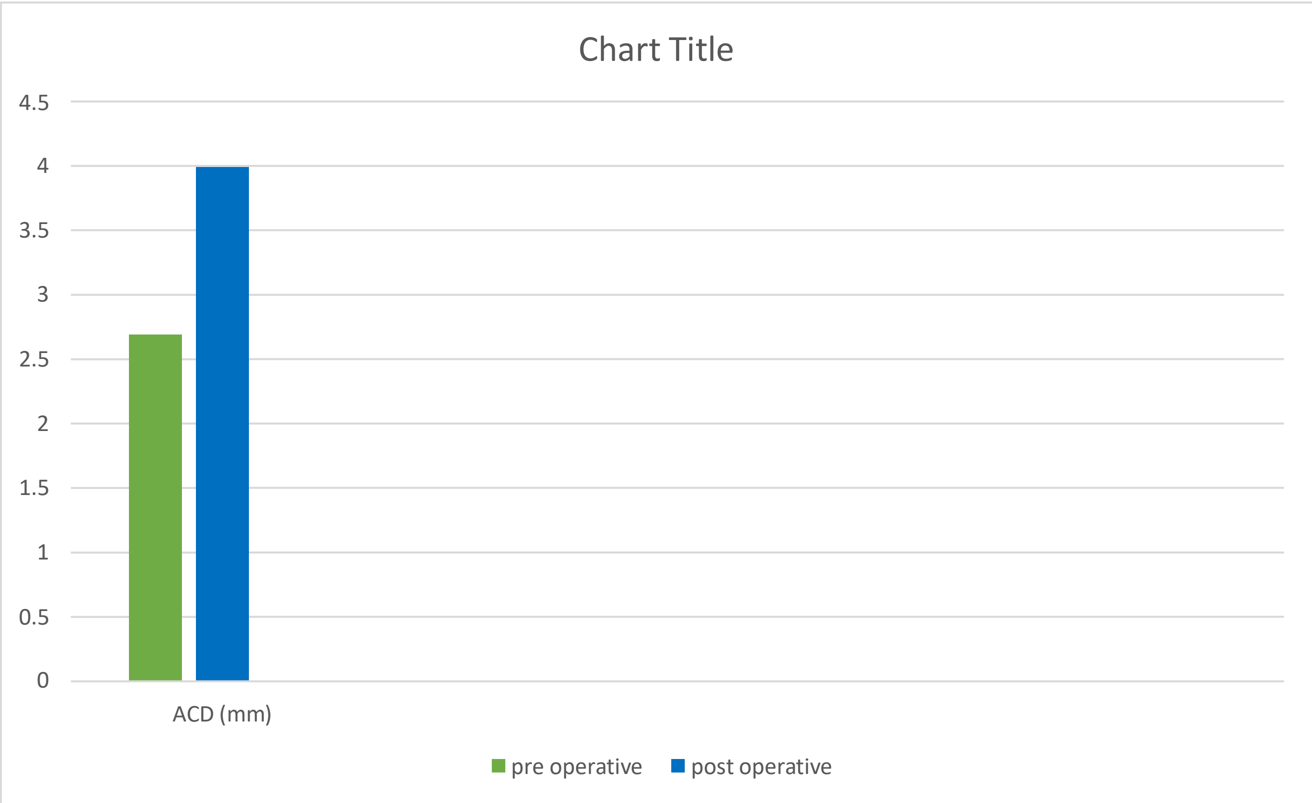
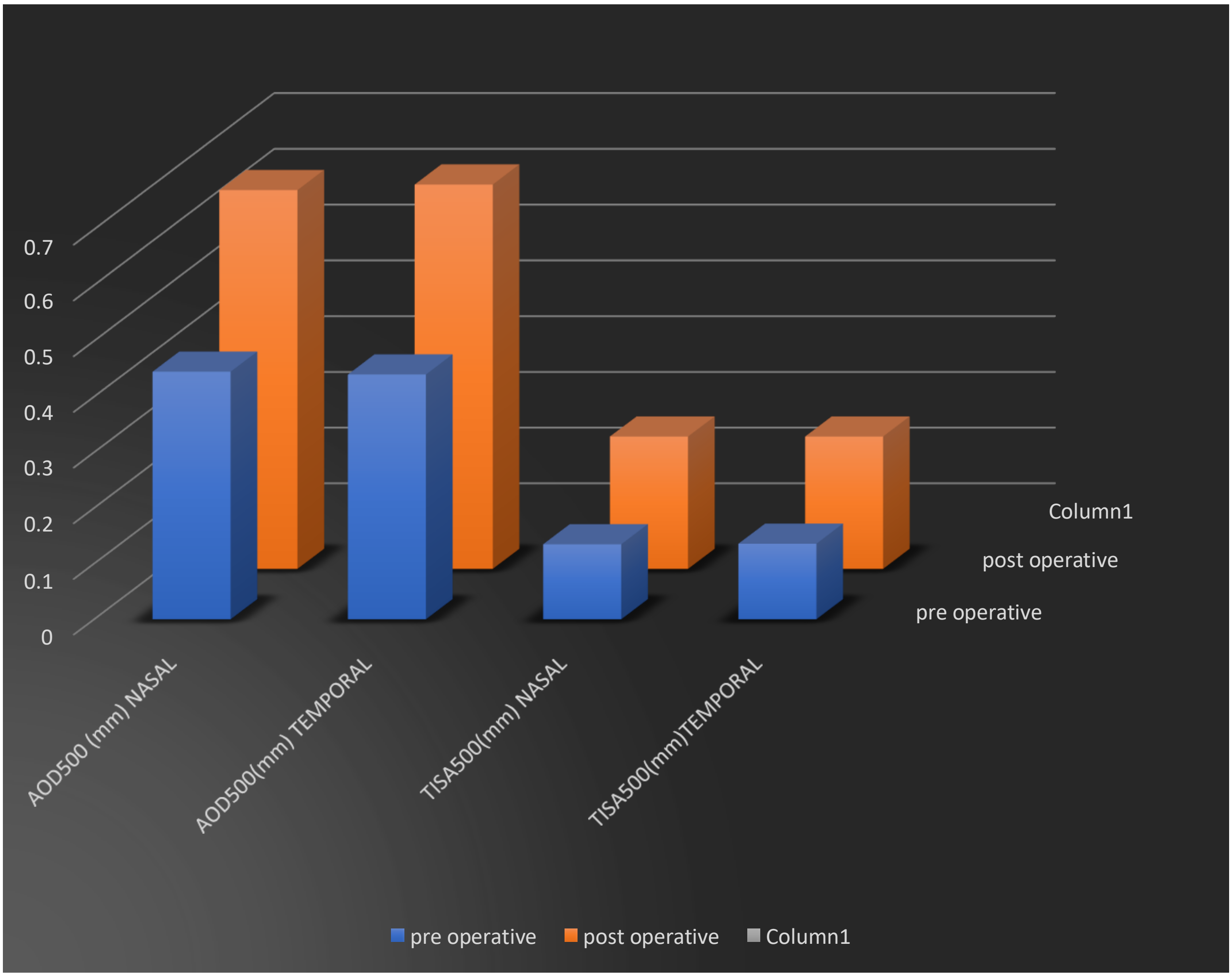
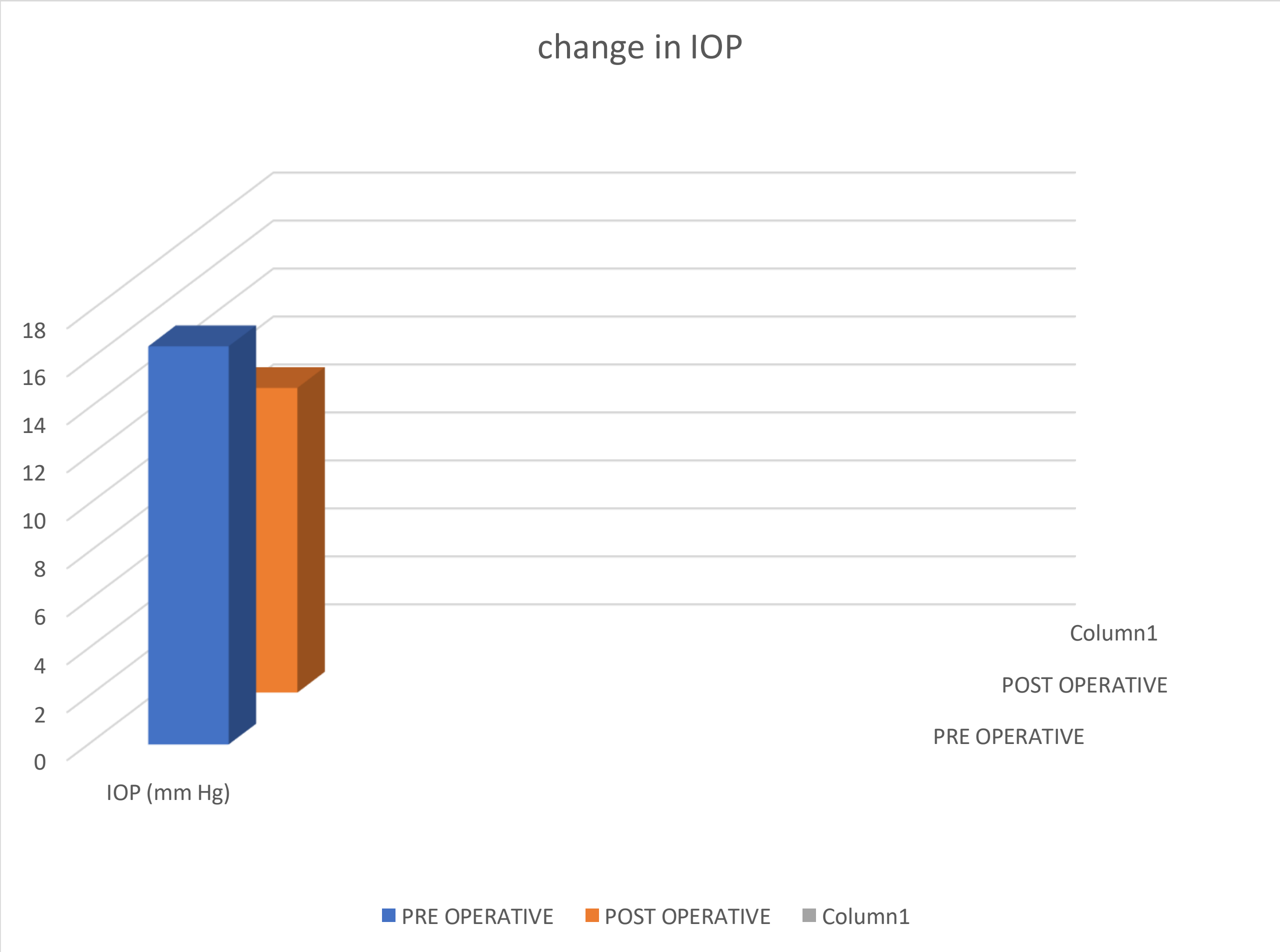


Chart Title
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
ACD (mm)
pre operative
post operative


0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
AOD500 (mm) NASAL
AOD500(mm) TEMPORAL
TISA500(mm) NASAL
TISA500(mm)TEMPORAL
Column1
post operative
pre operative
pre operative
post operative
Column1


change in IOP
18
16
14
12
10
8
6
4
2
0
IOP (mm Hg)
Column1
POST OPERATIVE
PRE OPERATIVE
PRE OPERATIVE
POST OPERATIVE
Column1

DISCUSSION

Anterior Segment OCT is a fast, reliable and easily usable modality for the assessment of various anterior chamber structures and parameters. It is easier to use than an UBM and is comparatively more comfortable from a patient perspective too.

Following phacoemulsification and the implantation of a foldable IOL during cataract surgery, significant anterior chamber alterations have been documented utilising A-scan ultrasonography, UBM, and Scheimpflug photography. In this study AS-OCT was used as the study modality and it showed good repeatability and proved to be more comfortable and easier to perform than other modalities like UBM. Regarding anterior segment characteristics, it provides good quantitative and qualitative results. Patients who have a fear or allergy to local anaesthesia can nevertheless receive an objective evaluation of the anterior chamber structures and iridocorneal angle thanks to the noncontact examination.

Kurimoto et al in their study conducted in 1997 demonstrated that the anterior chamber depth increased by a factor of 1.37 and the anterior chamber angle temporally widened by 1.57 times 3 months post-surgery by using UBM. Pereira & Cronemberger (2003) in another study using UBM reported that the ACD increases by 1.31 folds and the angle widens by 1.26, 1.53, 1.36 and 1.52 times in temporal, nasal, superior and inferior quardrants, respectively.These studies credited the changes in the anterior chamber to a 10-degree angular movement of the iris in the rearward direction after crystalline lens removal, and the removal of probable accompanying relative pupillary block in eyes with a shallow AC.

In our study the ACD was shown to have an increase of about 1.48 times post operatively when compared to pre operative levels. The ACA, AOD500, TISA500 showed an increase of 1.41, 1.5, 1.7 times respectively in post operative assessment when compared to the pre- operative values.

In various investigations, it has been observed that the changes in anterior chamber characteristics after undergoing cataract surgery and Intra Ocular Lens implantation were accompanied by considerable drops in IOP. [1][3][7][8]. In our study, there was a 25% decrease in intraocular pressure post operatively when compared to pre operative levels and this corelates with the other similar studies conducted in this regard. The mean post operative IOP measured in these patients were significantly lower than that at the post operative period. This shows similar findings to the other similar studies conducted elsewhere.

Hayashi et al. (2000) in their study associated the reduction Intra Ocular Pressure with the ACA widening. The primary theorised processes for the underlying biometric factors that cause IOP to decrease following cataract surgery are depth of the anterior chamber and broadening of angle configuration.

CONCLUSION

AS-OCT is proven to be a safer, swift and non-contact modality for quantifying the AC parameters in both pre- and post-operative phase in cataract patients.

The data obtained from this study confirm that in patients undergoing cataract surgery, the anterior chamber deepens, angle widens and all the angle parameters increases significantly post cataract surgery.

It was also proved from the data that the IOP also decreases significantly in the operated eyes.

SUMMARY

In this study, 61% of the participants were female and the remaining 39 % were female. Most of the study participants were in their 6^{th} and 7^{th} decades of life.

The study assessed the changes in anterior chamber parameters and intra ocular pressure in patients undergoing cataract surgery and compared between these values. The results showed that that there was a significant increase in the anterior chamber parameters and it was associated with a drop in the intra ocular pressure which was also significant statistically.

The study also demonstrated the AS OCT as a reliable and easy modality to assess the anterior chamber and its related parameters.

LIMITATIONS OF THE STUDY

- The main limitation of the study is that it doesn’t differentiate between patients undergoing phacoemulsification and Small Incision Cataract Surgery
- It also doesn’t assess whether the IOP and the anterior chamber parameter changes remain constant in a longer period of time.

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STUDY SUBJECT CONSENT FORM

I confirm that Dr. BIHAG K V has explained the research's purpose, the study procedure, the possible discomfort, and the benefits that I may experience in my own language. I have been explained all the above in detail in my own language, and I understand the same. Therefore, I agree to give my consent to participate as a subject in this research project.

___________________________ ____________________

(Participant) (Date)

__________________________________ ___________________

(Witness to above signature) (Date)

[illegible]

ಡಾ.ಬಿ.ಐ.ಎ.ಎಚ ಕೆ ವಿ ನನಗೆ ಸಂಶೋಧನೆಯ ಉದ್ದೇಶ, ಅಧ್ಯಯನದ ಕಾರ್ಯವಿಧಾನ

ಮತ್ತು ಸಂಭವನೀಯ ಅಸ್ವಸ್ಥತೆಗಳು ಮತ್ತು ನನ್ನ ಸ್ವಂತ ಭಾಷೆಯಲ್ಲಿ ನಾನು ಅನುಭವಿಸಬಹುದಾದ ಪ್ರಯೋಜನಗಳನ್ನು ವಿವರಿಸಿದ್ದಾರೆ ಎಂದು ನಾನು ಖಚಿತಪಡಿಸುತ್ತೇನೆ. ಮೇಲಿನ ಎಲ್ಲಾ ವಿಷಯಗಳನ್ನು ನನ್ನ ಸ್ವಂತ ಭಾಷೆಯಲ್ಲಿ

ವಿವರವಾR ವಿವರಿಸಲ್ಲRದ ೆ ಮತ್ತ ನಾನ ು ಅದನುನ ಅರ್ಥಮಾಡಿಕೊಂಡಿದ್ದ ೇನೆ. ಆದದ ರಿಂದ, ಈ ಸಂಶೋಧನ ಾ ಯೋಜನೆಯಲ್ಲಿ ವಿಷಯವಾR ಭಾಗವಹಿಸಲ ು ಒಪ್ಪಿ ಗೆ ನೋಡಲ ು ನಾನ ು ಒಪ್ಪಿ ತೇನೆ.

________________ ________________

(□□□□□□□□□□□□) (□□□□□□□□)

RISK AND DISCOMFORTS:

I understand that I may experience pain and discomfort during the examination or the treatment. This study's procedures are not expected to exaggerate these feelings associated with the usual course of treatment.

BENEFITS:

I completely understand my participation in this study, a longitudinal study of anterior chamber parameters using optical coherence tomography and Goldman's Applanation Tonometer.

I understand and accept the risks, the benefits, and the costs involved. I willingly give consent to take part in the study.

CONFIDENTIALITY:

I understand that this study's medical information will become a part of hospital records and be subject to confidentiality.

If the data are used for publication in the medical literature or teaching purposes, no name will be used, and other identifiers such as photographs will be used only with special written permission.

REQUEST FOR MORE INFORMATION:

I understand that I may ask for more questions about the study to Dr. VALLABHA K in the Department of Ophthalmology, who will answer my questions or concerns. I understand that I will be informed of any significant new findings discovered during the study, which might influence my continued participation. A copy of this consent form will be given to me to keep for careful reading.

REFUSAL FOR WITHDRAWAL OF PARTICIPATION:

I understand that my participation in this study is purely voluntary and that I may refuse to participate or may withdraw the consent and discontinue participation in the study at any time without prejudice. I also understand that Dr. BIHAG K V may terminate my participation in the study after explaining the reasons for doing so.

INJURY STATEMENT:

I completely understand that in the unlikely event of an injury to me, resulting directly from my study participation, and if such injury were reported promptly, the appropriate treatment would be available to me. However, no further compensation would be provided by the hospital. I understand that my agreement to participate in this study and not waiving any of my legal rights.

____________________________ ________________

(participant) (date)

I have explained to____the purpose of the research, the procedures required and the possible risks to the best of my ability.

____________________________ _________________

DR. BIHAG K V(Investigator) Date

PROFORMA FOR CASE TAKING

DEPARTMENT OF OPHTHALMOLOGY

B.L.D.E UNIVERSITY'S SHRI B.M.PATIL MEDICAL COLLEGE HOSPITAL

AND RESEARCH CENTRE, VIJAYAPURA-586103

CASE NO: OPD/IPD NO:

DATE:

NAME: AGE:

SEX:

OCCUPATION: ADDRESS

ANY OCULAR COMPLAINTS:

ANY COMORBIDITIES:

PERSONAL HISTORY

PAST MEDICAL HISTORY:

PAST SURGICAL HISTORY:

PAST HISTORY OF OCULAR TRAUMA:

FAMILY HISTORY:

OPHTHALMIC EXAMINATION

EYE UNDERGOING THE SURGERY		
	PRE-SURGERY	**POST-SURGERY**
External Appearance		
Ocular Motility		
Lids		
Conjunctiva		
Cornea		
Anterior Chamber		
Iris		
Pupil		
Lens		
Unaided		
Pinhole		

PARAMETERS	**PRE-SURGERY**		**POST SURGERY**	
ACD				
ACA	**NASAL**	**TEMPORAL**	**NASAL**	**TEMPORAL**
AOD	**NASAL**	**TEMPORAL**	**NASAL**	**TEMPORAL**
TISA	**NASAL**	**TEMPORAL**	**NASAL**	**TEMPORAL**
IOP				
LENS THICKNESS				
LENS VAULT				

KEY TO MASTER CHART

Sl no	Serial number
Ip no	Inpatient department number
R	Right eye
L	Left eye
ACD	Anterior chamber Depth
ACA	Anterior chamber Angle
AOD	Angle Opening Distance
TISA	Trabecular Iris Space Area
IOP	Intra ocular Pressure

<u>MASTERCHART</u>

						PRE-OPERATIVE								POST OPERATIVE							
sl no	PATIENT NAME	AGE	SEX	IP NO	OPERATED EYE	**ACD (mm)**	**ACA (degrees)**		**AOD 500(mm)**		**TISA500(mm2)**		**IOP (mm Hg)**	**ACD**	**ACA**		**AOD 500**		**TISA500**		**IOP**
							NASAL	**TEMPORAL**	**NASAL**	**TEMPORAL**	**NASAL**	**TEMPORAL**			NASAL	TEMPORAL	NASAL	TEMPORAL	NASAL	TEMPORAL	
1	JAYASRI BALAKOND	58	F	63095	R	2.68	29.4	31.1	0.425	0.461	0.139	0.13	15.5	3.61	36.4	39.7	0.806	0.56	0.25	0.238	11.3
2	VITTAL BASAPPA	60	M	64495	R	2.79	26.8	25	0.455	0.474	0.149	0.119	17.3	3.83	39.3	38.7	0.628	0.792	0.227	0.254	12.4
3	BHIMRAY	70	M	74255	L	3.01	23.5	31.2	0.4	0.555	0.147	0.138	16.8	3.97	34.8	36.7	0.641	0.76	0.223	0.231	11.8
4	IMAMSAB HASANSAB	60	M	74260	L	2.91	31	31	0.488	0.46	0.122	0.141	16.7	3.88	34.4	36	0.712	0.711	0.251	0.228	10.8
5	TIPAWWA ALDI	60	F	71241	R	3.02	27.7	30	0.479	0.398	0.123	0.134	16.7	3.99	40.9	38	0.649	0.75	0.226	0.226	14.3
6	NAGAPPA	60	M	80957	R	2.6	25.1	26.5	0.541	0.33	0.118	0.135	13.4	3.87	41.8	39.8	0.694	0.621	0.226	0.245	9.7

	HOSAMANI																				
7	REVAMMA	65	F	81255	L	3.01	26.3	27.8	0.321	0.342	0.118	0.136	14.3	3.48	40.3	40.5	0.743	0.763	0.24	0.227	10.8
8	DHARMANNA MAKAPPA	65	M	81256	L	2.45	31.7	30.8	0.419	0.509	0.121	0.125	15.6	3.88	35.1	35.8	0.798	0.781	0.232	0.222	11.8
9	KHAJABI NADAF	55	F	81287	L	2.9	27.7	29.5	0.494	0.546	0.119	0.123	13.9	3.95	41.5	38.5	0.733	0.571	0.222	0.239	10.4
10	BHIMRAY	66	M	83278	R	2.39	26.5	25.3	0.449	0.5	0.133	0.143	13.2	3.67	36.6	37.2	0.692	0.73	0.241	0.221	9.3
11	RAMANI GOUDA	70	M	73221	L	2.64	30.3	29.8	0.458	0.544	0.121	0.147	18.1	4.02	41.3	40.3	0.589	0.572	0.242	0.247	14.2
12	PARVATHY MALLAPPA	70	F	69318	L	2.51	28.6	29	0.408	0.548	0.132	0.123	17.6	4.05	35.6	37.3	0.7	0.745	0.246	0.253	13.5
13	BOURAVVA TELI	70	F	92044	L	2.6	31.2	29.6	0.426	0.491	0.134	0.125	13.6	3.95	36.7	38.6	0.807	0.719	0.242	0.253	9.8
14	DUNDAVVA	77	F	93324	L	2.38	26	28.3	0.515	0.411	0.127	0.15	15.2	4.11	35.2	37.6	0.697	0.673	0.221	0.218	10.2
15	SHARANAPPA	55	M	90536	L	2.55	29.1	28.9	0.489	0.474	0.15	0.135	18.9	3.88	41.7	38.8	0.801	0.622	0.255	0.227	14.3
16	MAYAVVA KRISHNAPPA	54	M	83749	L	2.32	32.4	30.7	0.51	0.43	0.123	0.136	19.3	3.85	36.5	36.7	0.586	0.702	0.218	0.237	15.7

17	HAJRABI	70	F	99572	L	2.94	23.7	30.6	0.462	0.44	0.133	0.126	19.7	4.08	41.3	41.2	0.641	0.641	0.235	0.246	15.9
18	SUJABAI SHIVASHIMPIGER	65	F	119431	L	2.51	27.3	28.4	0.551	0.474	0.133	0.125	15.3	4.02	36.5	35.5	0.566	0.621	0.241	0.233	10.7
19	PUNDLIK BIRADAR	60	M	107038	R	2.59	26.7	27.7	0.505	0.527	0.148	0.142	18.2	4.12	42	41	0.782	0.676	0.229	0.253	16.2
20	ATRAJAMMA PUJARI	60	F	119429	L	2.36	31	30.3	0.399	0.356	0.129	0.153	19.8	4.05	34.3	36.7	0.579	0.71	0.226	0.243	15.5
21	ANNAPURNA NINGAPPA	70	F	120597	L	2.77	29.8	28.2	0.328	0.537	0.128	0.125	14.2	3.93	36.5	36.1	0.736	0.803	0.248	0.219	11.8
22	RAJESAB DALAL	70	M	120593	R	2.3	29	27.3	0.555	0.502	0.14	0.125	17.3	3.89	37.8	39	0.652	0.75	0.255	0.223	10.8
23	JATEPPA KOLLUR	69	M	120641	L	2.53	28.9	30	0.413	0.558	0.142	0.146	16.3	4.01	37.4	36.5	0.769	0.739	0.249	0.227	12.3
24	SIDDAWWA SINDGI	70	F	120636	R	2.69	27.2	29.5	0.419	0.396	0.138	0.149	19.7	4.05	41	40.3	0.583	0.71	0.248	0.236	15.9
25	BAGAWWA AWATAGI	70	F	120619	L	2.65	24	26	0.546	0.512	0.137	0.132	20.7	4.22	40.3	40.3	0.674	0.736	0.237	0.25	17
26	NEELAMMA HADAPAD	69	F	120640	L	2.67	25.4	26.8	0.546	0.502	0.121	0.144	13.3	3.98	39.1	37.8	0.657	0.644	0.224	0.236	9.8

27	LAXMIBAI NATIKAR	68	F	120603	R	3.03	29	27.9	0.324	0.505	0.137	0.152	16.9	3.87	36.6	38.4	0.733	0.576	0.239	0.234	12.2
28	NINGAWWA TAMBE	68	F	131947	R	2.98	30.5	30.5	0.446	0.536	0.144	0.144	18.6	3.84	40.8	40.8	0.598	0.76	0.226	0.252	13
29	DANABAI CHAVAN	65	F	131809	L	3.03	25.8	27.2	0.373	0.457	0.126	0.142	17	3.88	34.6	35.2	0.738	0.78	0.249	0.226	12.3
30	UMABAI	63	F	131930	R	2.47	25.5	26.8	0.407	0.368	0.134	0.147	19.7	4.18	36.4	37.3	0.636	0.581	0.246	0.249	16.1
31	MEHABOOBI	55	F	115441	L	2.43	31	30.6	0.364	0.383	0.124	0.132	19.6	4.04	39	40.4	0.697	0.724	0.219	0.226	15.3
32	GANGAWWA HAVASAGI	64	F	105141	L	2.78	25.9	26.5	0.506	0.423	0.125	0.133	16.8	4.12	41	39.2	0.742	0.795	0.224	0.22	11
33	BASAMMA NATIKAR	60	F	142069	R	2.45	28.5	30.7	0.452	0.472	0.124	0.144	16.5	4.18	39.5	40.4	0.62	0.746	0.246	0.253	10.2
34	HUSEINSAB JALAEAD	55	M	142062	L	2.84	24.4	26.7	0.52	0.496	0.132	0.147	18.4	3.89	36.3	36.1	0.657	0.645	0.223	0.241	12.2
35	SASIKALA HIREMATH	60	F	144283	L	2.57	31.9	30.8	0.441	0.507	0.146	0.146	17.4	3.88	35	36.2	0.809	0.643	0.228	0.231	12.6
36	MALLIKARJUN DHARPAL	66	M	142983	R	2.42	25.9	25.6	0.552	0.449	0.132	0.13	14	3.97	38.8	38.1	0.664	0.79	0.237	0.237	10
37	MEHBOOBI MANIK	60	F	136795	L	2.96	28	29.4	0.538	0.322	0.123	0.146	19	3.98	34.5	36.2	0.6	0.765	0.242	0.251	14.5

38	MARALINGAWWA	65	F	145176	R	2.43	30.8	28.2	0.47	0.511	0.15	0.151	19.3	4.01	38	40.7	0.614	0.703	0.252	0.228	13.4
39	NARASAPPA HOSETTI	70	M	121906	L	2.65	31	29.6	0.335	0.42	0.152	0.118	15.5	4.22	36.9	38.4	0.574	0.785	0.241	0.232	9.8
40	SHIVALINGAPPA	69	M	156172	R	2.69	26.2	28.3	0.47	0.547	0.136	0.14	20.1	3.88	37.4	35.6	0.692	0.808	0.246	0.249	16.8
41	CHANDAPPA	60	M	157057	L	2.71	24	24.5	0.405	0.388	0.127	0.127	19.9	3.78	36.2	35.7	0.618	0.74	0.219	0.239	15.6
42	HANAMANTH CHIGARI	55	M	157071	L	2.81	24.7	26.3	0.466	0.483	0.125	0.147	15.2	3.99	39.4	40.8	0.744	0.648	0.239	0.231	10.9
43	LAXMIBAI KUBER PATTAR	68	F	163288	R	3.01	31.3	30	0.485	0.356	0.126	0.148	17.8	4.03	34.3	36.8	0.661	0.754	0.252	0.246	12.3
44	KAMALAVVA MADAR	60	F	156887	L	2.67	30.6	31.5	0.499	0.348	0.146	0.123	17.7	4.12	38.3	38.4	0.75	0.69	0.248	0.252	13.1
45	RACHAPPA KATTI	70	M	156886	R	2.55	24.1	26.5	0.35	0.516	0.147	0.119	16.4	4.18	38.9	39.8	0.696	0.671	0.252	0.23	12.3
46	BHIMARAYA TAKKE	62	M	147116	L	2.65	23.8	25.9	0.4	0.404	0.129	0.123	20.4	3.96	38.6	36.7	0.712	0.795	0.228	0.235	17.2
47	SAFIYA BAGAYAT	65	F	168216	R	2.67	27.3	26.5	0.475	0.542	0.139	0.132	17.5	3.92	40	39.4	0.726	0.741	0.252	0.247	13.4
48	N S BIRADAR	78	M	130220	R	2.31	24.4	25.8	0.402	0.447	0.123	0.119	17.1	3.85	42.1	40.7	0.678	0.572	0.236	0.236	12.5

49	GIRIJABAI LAMANI	72	F	161539	L	2.35	28.1	26.7	0.409	0.409	0.132	0.151	20.3	4.08	38.1	36.9	0.676	0.782	0.219	0.247	16.4
50	NABISAB DASTAGIRSAB	70	M	157787	L	2.38	28.4	26.4	0.335	0.33	0.137	0.153	16.9	3.88	37.4	38.8	0.583	0.665	0.225	0.231	12.3
51	SANGAPPA PATIL	56	M	5770	R	2.7	26.4	26.6	0.424	0.397	0.118	0.12	19.3	3.97	39.5	38.1	0.671	0.604	0.219	0.225	14
52	BASAPPA MADAR	61	M	2826	R	2.45	24.6	25.2	0.552	0.474	0.122	0.148	16.9	4.14	35.2	36.1	0.759	0.568	0.233	0.218	12.5
53	GIRIMALLAPA DINI	55	M	163217	R	2.34	32.2	31.3	0.371	0.327	0.142	0.119	16.7	4.11	38.3	39.8	0.724	0.623	0.233	0.252	13.5
54	SANTA GEJJE	55	F	156178	L	2.34	32.6	31	0.39	0.519	0.132	0.13	17.4	4.02	35.1	37.9	0.571	0.699	0.228	0.235	11.4
55	MAHANTAYYA HIREEMATH	75	M	5499	L	2.77	28.4	26.3	0.532	0.345	0.15	0.133	17.8	4.09	35.8	37.6	0.786	0.763	0.239	0.231	12.9
56	BASAWWA CHALAWADI	64	F	7587	R	2.32	25.1	26.1	0.532	0.526	0.148	0.153	13.5	3.97	36.6	38.8	0.729	0.684	0.241	0.249	10.3
57	FATIMA DARANGA	60	F	169931	R	2.61	29.1	28.1	0.38	0.324	0.149	0.127	20	3.98	36.6	36.8	0.572	0.707	0.239	0.232	15.5
58	MALLAPPA WALIKAR	65	M	11141	L	2.92	31.2	30.4	0.443	0.531	0.151	0.148	20.5	3.85	36.7	37.7	0.714	0.627	0.257	0.244	17.3
59	KAMALA BAI	64	F	20563	R	2.69	28.1	27.1	0.533	0.447	0.12	0.141	18.8	3.88	41.6	39.2	0.681	0.59	0.249	0.239	13.3

60	SITAWWA NATIKAR	63	F	20692	L	2.668	28	27.5	0.408	0.499	0.118	0.122	12.6	4.09	42.1	41.2	0.581	0.802	0.248	0.226	10.1
61	SHANTAWWA GURULINGAPPA	65	F	11040	L	2.669	30.2	26.4	0.427	0.466	0.144	0.151	12.8	4.11	39.4	38	0.692	0.676	0.256	0.232	9.8
62	KALLAPPA BADIGER	70	M	1145375	R	2.777	23.5	26.6	0.426	0.365	0.127	0.152	15.6	4.12	36.4	39.7	0.696	0.561	0.247	0.234	11.2
63	NIMBAWWA MUTTAPPA	61	F	21820	L	2.889	32.2	30.9	0.494	0.411	0.135	0.124	17.1	4.21	40.4	40.6	0.688	0.562	0.243	0.245	13.1
64	BANGARAWWA	83	F	12614	L	2.7	26.7	27.8	0.445	0.375	0.136	0.129	20.7	3.98	37.7	35.7	0.787	0.795	0.229	0.229	15.8
65	PUSHPAA	54	F	22602	R	2.94	30.8	26.4	0.52	0.459	0.149	0.144	18.8	3.85	34.3	40.1	0.678	0.636	0.223	0.219	13.1
66	SHEKHAPPA PUJARI	56	M	23346	R	2.29	31.4	27.6	0.464	0.552	0.13	0.124	17.9	3.97	34.9	35.3	0.58	0.661	0.246	0.239	14.4
67	JAYASREE BANDI	64	F	10038	R	2.8	24.8	25.5	0.387	0.438	0.145	0.128	18.1	4.01	36.9	36.6	0.732	0.778	0.222	0.226	12.6
68	LAXMAN SHIRANGANNAVAR	85	M	27797	R	2.51	25.9	24.6	0.483	0.41	0.14	0.132	14.7	4.02	41.6	37	0.663	0.763	0.229	0.219	11.8
69	BASAMMA	60	F	28713	R	3.07	25	30.8	0.471	0.343	0.125	0.131	14.8	3.98	38.4	39.8	0.561	0.727	0.231	0.222	12.1

70	SHRISAIL	70	M	90646	L	2.55	23.7	24.7	0.437	0.486	0.139	0.138	19.7	3.85	38.5	38.3	0.773	0.629	0.255	0.231	16.6
71	DURGAWWA	65	F	84594	L	3.05	23.6	31.7	0.439	0.359	0.127	0.128	13.7	3.92	40.5	38.9	0.684	0.678	0.243	0.249	11.3
72	MALLAMMA	50	F	84593	L	2.39	25.7	25.7	0.406	0.529	0.133	0.14	17.9	4.22	40.2	39.9	0.572	0.678	0.24	0.23	15.1
73	MALLAWWA	70	F	84596	R	2.53	24	26.4	0.555	0.334	0.131	0.118	15.6	4.13	39.6	37.4	0.634	0.677	0.233	0.233	11.7
74	KASHIBAI	75	F	122274	R	2.4	25.6	27.5	0.426	0.424	0.134	0.126	16.9	4.11	35.2	40.4	0.766	0.731	0.241	0.242	13.3
75	SHANTAMMA KALAL	71	F	122235	L	2.45	32.5	27.2	0.551	0.351	0.132	0.123	15	3.86	36.5	35.2	0.685	0.63	0.222	0.246	11
76	JANNATBI	81	F	122382	R	2.63	31.5	28.1	0.532	0.329	0.152	0.131	16.6	3.88	38.9	40.6	0.57	0.673	0.24	0.242	13.1
77	CHANDRAKALA	52	F	122122	R	3.08	29.2	26.5	0.494	0.348	0.144	0.147	17.8	3.92	41.7	38.9	0.656	0.761	0.25	0.241	14.4
78	LAKSHMAWWA	55	F	130625	R	2.57	30.9	28.8	0.44	0.349	0.126	0.138	18.2	4.01	34.3	39.5	0.598	0.72	0.254	0.236	15.6
79	YELLAPPA MALAGOUDAR	53	M	130633	R	2.91	30.6	29.2	0.402	0.387	0.151	0.137	17.5	3.85	39.1	36.4	0.76	0.709	0.241	0.251	12.2
80	RANGAPPA GIRADDI	83	M	130652	R	2.68	31.3	25.8	0.557	0.46	0.15	0.119	17.2	3.98	40.4	38.3	0.737	0.702	0.222	0.246	11.8

81	BUJAPPA	68	M	130618	L	2.3	28.6	25.4	0.452	0.548	0.132	0.147	12.7	4.05	38.3	38.1	0.795	0.581	0.245	0.237	10.2
82	GIRIMALLAYYA HIREMATH	70	M	130639	L	2.62	26.8	27.1	0.405	0.327	0.14	0.146	13.3	4.02	39.7	35.4	0.61	0.767	0.243	0.248	9.9
83	MAHADEV NAGANAVAR	65	M	130629	R	2.66	26.4	27.2	0.343	0.553	0.15	0.135	19.8	3.89	34.5	37.2	0.749	0.806	0.241	0.255	15.7
84	SHAKUNTALA KALAL	68	F	13184	L	2.38	26.4	24.9	0.471	0.334	0.144	0.141	12.7	3.86	41.9	39.2	0.567	0.78	0.246	0.23	10.8
85	TARABAI CHAVAN	80	F	127354	L	2.39	27.1	26.3	0.342	0.488	0.119	0.143	16.2	4.22	34.6	36.2	0.78	0.804	0.23	0.25	14.5
86	CHANDAMMA	57	F	123603	L	2.43	27.3	31.4	0.419	0.534	0.13	0.123	16.2	4.03	40	35.3	0.652	0.718	0.255	0.231	14.7
87	IRABASAPPA	75	M	133155	R	2.41	23.9	26.9	0.549	0.411	0.135	0.139	14.5	3.98	40.9	40.8	0.717	0.568	0.225	0.24	11.8
88	RUKMABAI PAWAR	65	F	128666	L	2.96	27.4	31.8	0.522	0.418	0.147	0.13	20.7	3.86	37.8	36.3	0.742	0.685	0.255	0.228	13.8
89	SHIRAPPA CHITTARAGI	70	F	138285	R	2.7	25.2	26.7	0.502	0.482	0.128	0.129	14.6	4.01	37.4	35.1	0.786	0.585	0.253	0.249	12.1
90	SANGABASAPPA WALIKAR	68	M	138296	L	2.35	31.5	28.5	0.48	0.354	0.15	0.128	19.6	3.88	41.1	38.6	0.586	0.686	0.228	0.233	14.9

91	BASAPPA ANKOTI	65	M	138289	L	2.43	28.1	26.8	0.366	0.401	0.125	0.144	20.6	3.89	41	35.2	0.676	0.627	0.253	0.253	15.8
92	SAROJA	48	F	138303	R	2.86	25.2	29.1	0.387	0.457	0.126	0.137	20.2	3.98	38.5	38.2	0.703	0.778	0.256	0.226	16.8
93	RAMACHANDRA LAMANI	60	M	138291	R	2.86	28.3	27.1	0.447	0.421	0.133	0.144	14.7	4.02	36.5	36.1	0.638	0.647	0.227	0.251	12.4
94	SABAMMA	75	F	138281	R	2.37	28.2	29.2	0.332	0.379	0.132	0.151	19.5	3.89	40.7	37.4	0.653	0.606	0.247	0.253	15.9
95	NEELAMMA BIRADAR	60	F	138308	R	2.46	29.7	28.6	0.347	0.51	0.129	0.126	15.2	3.98	38.4	36.3	0.612	0.773	0.23	0.245	11.4
96	NAGAWWA	66	F	138307	L	2.87	25.8	30.1	0.358	0.336	0.132	0.151	18.5	3.99	40.5	37.9	0.562	0.676	0.228	0.245	13.8
97	SHIVANNA PUJARI	65	M	146206	L	2.56	29.1	28.5	0.454	0.326	0.153	0.143	12.4	4.01	38.2	36.9	0.591	0.572	0.22	0.222	10.1
98	SONABAI RAMA NAIK	60	F	146207	R	3.07	28	26.3	0.438	0.388	0.152	0.138	19.7	3.88	37.8	36	0.578	0.579	0.246	0.234	14.5
99	SIDDAPPA VADER	70	M	146251	L	2.97	26.2	28.1	0.367	0.336	0.13	0.141	13.9	3.99	35.5	37	0.648	0.705	0.235	0.251	11.1
100	KASTURI BAI PATIL	70	F	146219	L	2.87	26.4	24.7	0.36	0.429	0.149	0.139	15.8	4.03	38.4	40.2	0.694	0.619	0.225	0.256	12.2
101	KASHIBAI JADHAV	76	F	146210	L	2.8	32.6	32	0.479	0.536	0.123	0.134	12.9	4.01	34.9	36.4	0.692	0.723	0.249	0.254	9.9

102	MUTTAPPA KAMBALI	54	M	146255	L	2.61	32.4	30.3	0.457	0.337	0.121	0.141	16.5	4.15	34.3	36.1	0.623	0.691	0.246	0.255	13.1
103	HULGAPPA MADAR	70	M	146215	L	2.52	28.4	26.6	0.45	0.321	0.149	0.121	15.4	3.87	37.4	36.4	0.755	0.667	0.224	0.255	10.5
104	SARANAPPA GUDDA	60	M	147351	L	2.47	25.1	27.8	0.416	0.46	0.144	0.12	12.4	4.04	34.7	36.3	0.75	0.656	0.251	0.226	10.4
105	SIDAPPA	70	M	146251	R	3.07	23.5	25.5	0.392	0.406	0.118	0.15	16.5	4.13	37.9	36.8	0.633	0.625	0.247	0.222	13.3
106	SONABAI K	60	F	146207	L	3.02	26.2	24.8	0.389	0.471	0.143	0.124	18.6	4.11	38.2	40.4	0.808	0.681	0.241	0.251	15.1
107	PUTLAWWA	56	F	146281	R	2.59	30.7	28.8	0.494	0.452	0.141	0.12	16.9	4.13	39.5	39.4	0.602	0.566	0.225	0.234	12.3
108	SHANTAWWA K	65	F	146273	L	2.32	29.5	28.7	0.389	0.363	0.121	0.126	20.8	3.85	37.3	39.5	0.641	0.661	0.249	0.254	17.4
109	SHANTA BAI	65	F	162062	R	2.93	30.4	28.9	0.347	0.507	0.122	0.12	20.2	4.01	36.5	36.9	0.798	0.743	0.245	0.222	11.2
110	BANGARAWWA	65	F	161169	R	2.79	24	26.4	0.432	0.478	0.142	0.151	15.7	3.98	36.3	38.8	0.641	0.697	0.24	0.234	14.1
111	KESU SANKAR RATHOD	62	M	162057	R	3	31.7	29.7	0.501	0.437	0.151	0.13	15.8	3.86	35.2	37.5	0.646	0.665	0.23	0.231	10.4
112	BABU RATHOD	60	M	162051	L	2.61	31.1	29.7	0.508	0.413	0.139	0.13	19.1	3.88	38.6	38.9	0.722	0.758	0.233	0.231	15.4

113	NIMBEWWA SANGAPPA	60	F	155893	L	2.43	29.7	29.4	0.547	0.357	0.142	0.132	13.8	4.01	36.5	38.6	0.681	0.693	0.224	0.227	10.8
114	JAYADEV	65	M	154284	R	2.65	30.7	29.8	0.516	0.344	0.14	0.15	19.1	4.03	37.3	36.4	0.568	0.741	0.227	0.243	15.8
115	NOOR MUHAMMED	63	M	164491	R	2.42	29.7	29.9	0.378	0.447	0.144	0.132	13	4.01	41.2	40.4	0.787	0.575	0.237	0.218	10.1
116	NEELAWWA	55	F	149709	R	3.05	29.1	27.6	0.403	0.514	0.135	0.147	17.4	3.99	36.5	36.4	0.715	0.601	0.218	0.246	13.1
117	INDIRA SINGE	53	F	164490	L	2.76	24.4	26.1	0.444	0.558	0.136	0.126	19.6	4.12	34.7	36.3	0.68	0.6	0.257	0.221	16
118	RATNABAI HARIJAN	60	F	164594	R	2.46	23.9	25.8	0.331	0.459	0.128	0.119	20.2	3.85	40.3	38.9	0.563	0.767	0.22	0.225	14.8
119	KALLAPPA KANABUR	68	M	172086	L	2.91	31.5	30.7	0.516	0.518	0.15	0.152	14.4	4.15	38.7	37.5	0.567	0.748	0.239	0.229	11.2
120	CHANDA BAI KORATTI	72	F	172184	R	2.83	25.7	27	0.546	0.529	0.123	0.139	13.7	3.97	41.5	39.8	0.591	0.642	0.241	0.252	15.2
121	RAMAWWA	60	F	187620	L	2.69	27.4	28.3	0.49	0.423	0.139	0.145	19	4.05	41.7	39.5	0.593	0.644	0.255	0.225	17.3
122	GAMALA BAI	66	F	186314	L	2.62	23.6	25.1	0.492	0.398	0.149	0.149	13.6	3.89	38.4	40.4	0.568	0.745	0.25	0.247	11.1
123	BASAMMA KOMBIN	71	F	196058	L	2.98	32.4	30.9	0.423	0.51	0.131	0.151	18.4	3.93	38	38.3	0.586	0.749	0.237	0.22	13.2

124	SOMALA BAI	60	F	196141	R	2.5	27.4	29.3	0.496	0.526	0.131	0.148	13.2	3.99	34.8	36.9	0.788	0.784	0.244	0.243	11
125	YAMANA WWA CHALAW ADI	65	F	194839	R	2.97	29.3	31	0.395	0.482	0.137	0.144	12.9	4.04	35.3	37.8	0.614	0.72	0.231	0.256	9.7
126	MAREM MA	70	F	196054	R	2.61	25.2	26.7	0.502	0.532	0.153	0.128	12.4	4.19	37.9	36.2	0.802	0.772	0.237	0.241	10.5
127	SIDDHAP PA DHORI	75	M	196036	R	2.89	24.5	26.6	0.473	0.454	0.12	0.144	14	3.99	35.3	37.6	0.796	0.703	0.235	0.252	11.5
128	SUSALAB AI NALWAT WAD	60	F	205951	R	2.42	30	30.3	0.334	0.471	0.134	0.143	20.3	3.85	42	40.1	0.764	0.75	0.232	0.219	16
129	SOMRAI YEVOOR	74	M	206048	R	2.55	29	29.6	0.488	0.517	0.142	0.123	13.9	3.99	42	40	0.731	0.703	0.229	0.243	12.5
130	NAGAYY A HIREMAT H	75	M	76516	R	2.71	25.4	27.5	0.356	0.421	0.143	0.142	12.7	4.05	40.6	39.1	0.781	0.706	0.244	0.24	10.6
131	ANASUB AI KALLUR	60	F	223249	L	2.83	24.4	26.1	0.543	0.531	0.15	0.15	16.6	4.08	35.3	36.1	0.585	0.677	0.24	0.242	11.8
132	YASHWA NTH AGASAR	69	M	223252	R	2.48	24.3	26.8	0.458	0.402	0.142	0.125	19.6	4.01	38.1	37.8	0.707	0.639	0.256	0.236	15
133	SHESAPP A GOUDA BIRADAR	75	M	215949	R	2.54	30.9	28.5	0.485	0.391	0.143	0.149	20.7	4.11	37.3	35.4	0.711	0.711	0.24	0.224	17.3

134	PRABHAYYA HIREMATH	55	M	247124	R	2.46	29.1	31.3	0.432	0.456	0.123	0.125	16.4	4.02	40.3	40	0.671	0.741	0.223	0.254	12.3
135	KASTURI BAI HADAPAD	62	F	247080	R	2.49	24.2	26	0.452	0.379	0.13	0.152	16.4	3.89	36.1	35.9	0.655	0.716	0.256	0.219	14.4
136	NARASAVVA TULASIGERI	65	F	247084	R	2.32	24.9	25.9	0.433	0.506	0.148	0.135	19.3	3.88	36.9	38.9	0.569	0.657	0.226	0.241	16.5
137	BOURAVVA TELI	70	F	247170	L	2.29	27.3	29.4	0.327	0.453	0.12	0.139	19.9	3.98	37	39.2	0.609	0.707	0.235	0.231	17.1
138	NINGAPPA	65	M	246927	R	2.35	29.6	27.1	0.351	0.477	0.14	0.138	15.4	4.12	38	39.3	0.773	0.626	0.222	0.256	13.3
139	GOUSAMBEE	60	F	247065	L	2.38	26.2	27.9	0.516	0.361	0.137	0.145	12.4	4.02	34.5	36.7	0.595	0.584	0.247	0.235	9.4
140	MANIBAI RATHOD	55	F	246921	L	3.04	30	30	0.454	0.556	0.139	0.146	19.6	3.88	41.2	39.6	0.73	0.78	0.246	0.226	15.4
141	SHANTAMMA KARANADAR	70	F	246912	R	2.56	29.7	31.4	0.521	0.415	0.129	0.126	15.6	3.89	36.4	38.1	0.783	0.762	0.242	0.218	12.3
142	ABEDA CHALAWADI	65	F	246880	R	2.87	25.3	26.7	0.386	0.395	0.136	0.134	18	4.07	39.6	40.9	0.625	0.609	0.234	0.245	16.4
143	DUNDAWWA SINGHE	65	F	247166	L	2.93	24.3	26.5	0.495	0.425	0.135	0.141	15.9	4.22	35.1	37.8	0.622	0.706	0.239	0.239	12.3

144	MALLAPPA BASAPPA	64	M	248438	L	2.33	31.7	29.7	0.46	0.415	0.141	0.15	13.1	4.18	40.2	39	0.718	0.587	0.218	0.229	10.5
145	BHIMRAY BORAGI	65	M	248469	R	2.66	24.7	26.9	0.341	0.424	0.137	0.128	20.5	3.87	35.8	37.1	0.695	0.653	0.23	0.22	15.2
146	MAHALINGAPPA	60	M	248475	R	2.82	31.8	29.3	0.498	0.333	0.122	0.15	16	3.96	39.8	37.4	0.761	0.56	0.241	0.22	14.1
147	BHIMANNA	65	M	248469	R	2.34	25.5	27.2	0.333	0.485	0.128	0.126	15.1	3.85	37.1	39.8	0.796	0.764	0.25	0.253	13.4
148	DURGAPPA KONCHIKORAM	65	M	165507	L	2.87	28.3	29.4	0.464	0.414	0.133	0.142	17.5	3.98	36.2	37.1	0.794	0.729	0.239	0.237	11.6
149	DASTAGIRSAB DANGE	61	M	252570	R	2.56	24.8	25.7	0.552	0.48	0.141	0.125	16.3	3.91	41.2	39.5	0.649	0.632	0.241	0.228	11.1
150	RIHANA BADAMI	65	M	252667	R	2.96	30.2	28.2	0.525	0.388	0.139	0.132	14.9	4.01	34.7	35.7	0.624	0.794	0.257	0.229	10.1
151	GOVIND RATHOD	60	M	274020	L	2.77	24.4	25.7	0.349	0.453	0.131	0.152	14.4	4.17	36.6	38.3	0.595	0.6	0.222	0.228	10.4
152	SHARANAMMA TOTAD	56	F	283933	R	3.01	30.2	28.6	0.332	0.338	0.126	0.119	19.3	4.08	37.2	37.6	0.713	0.599	0.221	0.236	13.8
153	SHEKAWWA SHIROL	60	F	283950	R	2.42	29.7	27.9	0.502	0.548	0.147	0.147	13	4.06	37.9	38.6	0.632	0.69	0.218	0.249	9.7
154	SAVITA DANYAL	50	F	283939	R	2.49	25.3	27.2	0.479	0.426	0.131	0.121	13.8	4.13	38.3	40.6	0.596	0.622	0.24	0.257	9.8

155	BASAPPA BIJAPUR	65	M	283969	R	2.71	30.3	30.3	0.525	0.327	0.138	0.118	20.8	4.11	41.6	39.2	0.703	0.609	0.24	0.237	13.5
156	GANGAMMA	55	F	296845	R	2.57	27.3	29.1	0.532	0.527	0.138	0.121	15.4	3.97	38.4	39.3	0.712	0.615	0.251	0.227	11.4
157	JAIBUN	70	F	197279	L	2.72	25.2	26.3	0.379	0.504	0.118	0.118	12.3	4.12	37.8	35.2	0.758	0.804	0.257	0.229	10.1
158	SANTAWWA	65	F	297787	L	2.66	24.2	26.2	0.465	0.472	0.142	0.118	18.7	4.08	37.9	39.8	0.741	0.741	0.246	0.222	13.2
159	ALABEE	76	F	297277	L	2.88	24.2	25.1	0.36	0.549	0.148	0.125	15.4	4.02	38.2	36.3	0.75	0.708	0.255	0.25	11.5
160	RUKMABAI PAWAR	60	F	297733	L	2.29	27.7	29.2	0.451	0.337	0.121	0.118	15.9	4.05	42.1	40.5	0.784	0.772	0.248	0.25	12.2
161	SANGAPPA ODI	70	M	298812	L	2.87	27.7	29.6	0.419	0.343	0.136	0.146	13.7	4.18	41.7	39.9	0.782	0.692	0.246	0.235	10
162	SANTABAI SARDAR	68	F	303681	R	2.34	27.3	28.2	0.433	0.463	0.126	0.131	13.5	3.99	35.2	36.9	0.591	0.649	0.235	0.253	9.3
163	SEETABAI	58	F	297096	L	2.37	25.6	27	0.434	0.362	0.149	0.135	16	3.85	38.7	40.3	0.781	0.585	0.243	0.225	12.8
164	SANTABAI RODAGI	65	F	304103	R	2.33	25.8	25.2	0.556	0.367	0.138	0.139	20.2	3.99	37.8	36.9	0.6	0.599	0.227	0.249	16
165	JUBEDA	50	F	304037	L	2.71	28.5	28.2	0.384	0.34	0.119	0.125	17.2	4.13	36.2	36.7	0.625	0.688	0.223	0.22	13.6

166	VITHOBA	75	M	304108	L	2.49	29.5	27.4	0.47	0.33	0.125	0.138	12.2	3.88	35.2	36.8	0.656	0.775	0.23	0.243	10.2
167	SOMARAYA BILAL	55	M	317263	L	2.56	25.4	27.5	0.497	0.426	0.147	0.118	19.5	3.85	39.9	38.9	0.659	0.695	0.255	0.241	14.3
168	REVAMMA HADANATTI	55	F	317277	R	2.64	25.2	26.3	0.456	0.493	0.135	0.132	17	4.06	39.3	37.6	0.785	0.744	0.255	0.222	13.4
169	GANGABAI	59	F	317259	L	2.51	29.4	28	0.511	0.425	0.119	0.136	18.3	4.05	37.3	39.8	0.568	0.68	0.253	0.231	13.6
170	SUMITRA KUMBAR	60	F	317256	R	2.82	24.7	26.5	0.41	0.428	0.142	0.122	16	4.02	41.3	41.1	0.66	0.772	0.254	0.247	12
171	UDANDA WAIKAR	76	M	317265	R	2.6	24.4	26.9	0.488	0.392	0.137	0.149	15.4	3.88	38.5	37.9	0.6	0.749	0.25	0.235	11.1
172	TASNEM	52	F	315279	L	2.46	31.8	29.4	0.42	0.553	0.128	0.137	19.4	3.85	34.9	36.4	0.62	0.733	0.255	0.228	16.3
173	YAMANAPPA BASAPPA	65	M	3447	R	2.87	23.8	25.5	0.322	0.41	0.125	0.126	14.1	4.17	38.2	37	0.787	0.593	0.237	0.228	10.4
174	SHAMALA DASHYAL	56	F	3440	R	2.87	28.1	26.3	0.523	0.451	0.142	0.148	16.9	3.87	36.2	37.4	0.623	0.753	0.242	0.228	10.6
175	JAIRABI MOMIN	61	F	3462	R	3.03	26.4	28.6	0.354	0.507	0.121	0.15	18.2	3.89	37.6	38.8	0.777	0.756	0.229	0.241	12.9
176	NANDAPPA BHAVIKATTI	78	M	3472	R	2.66	24.3	25.9	0.408	0.55	0.149	0.15	14.3	4.09	35.7	35.6	0.68	0.59	0.221	0.234	11.4

177	SAREVVA	60	F	3497	R	2.8	28.4	28.7	0.343	0.45	0.147	0.146	17.3	4.11	36.9	38	0.787	0.72	0.219	0.238	12
178	SHARADA	59	F	3475	R	2.69	27.6	29.9	0.372	0.516	0.141	0.121	17.6	3.98	40	38.4	0.613	0.71	0.228	0.236	10.6
179	MOHAMMADSAF NADAF	65	M	3460	L	3.02	30.1	31.2	0.513	0.442	0.123	0.134	14.4	3.85	38	39.9	0.713	0.691	0.252	0.235	11
180	HANAMAWWA NAIKODI	54	F	3458	R	2.47	24.3	25.8	0.341	0.47	0.127	0.141	19.3	3.99	40.3	39.7	0.754	0.703	0.237	0.233	13.5
181	GURUBAI	66	F	13050	R	2.82	24.4	26.9	0.421	0.5	0.137	0.129	12.8	3.97	34.8	36.2	0.745	0.685	0.237	0.243	9.4
182	BHIMARAYA K	73	M	49281	L	2.6	27.5	25.5	0.401	0.347	0.129	0.145	12.7	4.03	35.7	35.5	0.742	0.801	0.228	0.256	9.6
183	MAHADEVI	60	F	49249	L	2.45	29.8	27.6	0.462	0.363	0.124	0.147	12.5	4.08	35.4	37.3	0.586	0.739	0.241	0.245	10.1
184	NEELAMMA	60	F	49255	L	2.95	24.5	26.3	0.449	0.491	0.142	0.137	13.9	4.09	41.2	40.3	0.566	0.695	0.23	0.221	11
185	GOVIND RATHOD	55	M	49292	R	3	26.8	27.8	0.381	0.371	0.127	0.126	19.4	4.03	41.1	39.5	0.806	0.757	0.232	0.242	13.5
186	RATNABAI T	70	F	49248	R	2.37	26.7	28.1	0.481	0.478	0.13	0.122	19.3	4.01	35.1	36.4	0.599	0.623	0.234	0.247	13.5
187	NAGAMMA	65	F	49263	R	2.43	24.3	25.9	0.49	0.498	0.132	0.144	16.7	3.97	37.9	39.7	0.766	0.597	0.249	0.253	12.1

188	KALAPPA	70	M	49258	R	2.3	30.6	28.8	0.534	0.553	0.132	0.138	14.9	4.05	36.5	35.9	0.774	0.585	0.251	0.245	11
189	KASIBAI	70	F	69886	R	2.32	23.6	25.9	0.37	0.368	0.135	0.143	19.7	4.01	39.8	40.7	0.661	0.722	0.255	0.257	13.1
190	HANAMANTH	55	M	14562	L	2.36	27.3	28.4	0.482	0.53	0.124	0.132	18.3	4.03	41.3	39.9	0.676	0.773	0.227	0.224	14
191	SHAKUNTALA	75	F	74322	R	2.34	32.2	30.7	0.375	0.388	0.128	0.13	19.4	4.22	39.8	39.4	0.579	0.603	0.247	0.23	11.6
192	AMEENA	60	F	74664	L	3.04	29.4	31.6	0.381	0.502	0.133	0.132	13.9	3.85	35.4	37	0.76	0.771	0.225	0.243	11.5
193	SHIVAPUTRA	85	M	75118	R	2.57	29.9	29.4	0.505	0.543	0.144	0.134	14	4.08	37.5	38.6	0.64	0.629	0.253	0.234	12
194	APPASAHEB	61	M	69024	L	2.66	25.8	26.7	0.538	0.455	0.131	0.148	19.7	3.89	40.2	39.4	0.626	0.735	0.224	0.237	13.6
195	IRAGANTAPPA	70	M	75128	R	2.77	28.9	28.1	0.395	0.391	0.13	0.152	17	3.87	35.8	37.2	0.741	0.721	0.239	0.243	15.4
196	ANUSABAI HADAPAD	64	F	75116	R	2.64	29.6	28.2	0.367	0.344	0.143	0.143	17.7	4.05	36.5	36.1	0.693	0.586	0.252	0.252	13.3
197	NEELAWWA	62	F	75112	L	2.89	25.9	26.5	0.518	0.416	0.123	0.133	13.5	4.03	37.9	36.2	0.687	0.753	0.256	0.22	11.1
198	GUDUMA	65	F	75100	R	2.73	30.1	28.9	0.438	0.516	0.121	0.13	18.8	4.01	40.2	40	0.642	0.568	0.249	0.235	12.4

199	HASSAN	55	M	75125	R	2.67	31.4	29.3	0.507	0.442	0.13	0.127	19.4	4.02	36.1	37.8	0.576	0.636	0.221	0.244	15.6
200	NIBEWWA KAMABALE	61	F	83515	L	2.33	26.8	25.3	0.52	0.491	0.144	0.119	16.6	3.85	34.5	35.3	0.757	0.685	0.226	0.256	12.2
201	BASAMMA KURI	57	F	85633	L	3	28.4	27.5	0.372	0.556	0.139	0.13	13.5	4.12	36.8	36.1	0.695	0.573	0.225	0.25	11.4
202	SIDDHANAGOUDA BIRADAR	66	M	85335	R	2.4	30	28.6	0.462	0.482	0.129	0.144	19.5	4.09	36.8	37.9	0.678	0.713	0.245	0.241	15.4
203	BASAMMA SHIRAGUND	65	F	233419	L	2.53	29	31.5	0.337	0.348	0.141	0.124	17.4	4.13	38.5	39.4	0.695	0.761	0.246	0.234	14.7
204	NOORJAHAN	66	F	99918	R	2.65	30.1	28	0.447	0.341	0.12	0.127	18	4.17	40.2	38.3	0.799	0.734	0.251	0.255	13.7
205	KHUMU HITNALLI	70	M	99943	R	2.95	28.4	27.6	0.335	0.482	0.142	0.123	13.3	4.03	38.2	40	0.749	0.648	0.254	0.222	9.5
206	SARAMMA	78	F	99923	R	2.35	31.9	29.8	0.444	0.446	0.126	0.147	16.1	4.16	39.5	38.5	0.681	0.793	0.247	0.239	12.4
207	TIPAVVA	75	F	136906	R	3.05	24.7	25.9	0.481	0.339	0.131	0.145	15.3	4.06	41.6	40.1	0.667	0.571	0.228	0.251	11.5
208	MALAMMA MADAR	62	F	107795	R	2.34	31.3	31.4	0.495	0.343	0.141	0.151	15	4.08	35.2	36.8	0.593	0.75	0.23	0.234	13.6
209	SARABEE	75	F	102362	R	2.37	26.8	28.8	0.428	0.38	0.131	0.137	18.3	4.09	39.4	39.5	0.768	0.808	0.23	0.252	14.5

210	MAHADEVAPPA PUJARI	60	M	107759	L	2.72	26	27.9	0.479	0.531	0.123	0.153	14.6	3.85	37.2	36.3	0.69	0.625	0.223	0.229	11.1
211	TUKARAM CHAVAN	65	M	125372	R	2.84	30.1	28.2	0.38	0.472	0.126	0.124	14.2	3.86	36.5	37	0.574	0.733	0.235	0.255	12
212	IRAPPA KONDAGULI	60	M	126525	L	2.6	26.9	28	0.421	0.377	0.136	0.129	13.2	4.19	36.5	38.9	0.579	0.703	0.249	0.232	10
213	JANABAI KAPPALI	67	F	126581	L	2.72	32.5	31	0.369	0.358	0.131	0.127	18.9	3.99	41	40.5	0.697	0.74	0.232	0.257	13.1
214	BORAMMA AALDAL	55	F	125400	L	3	30	29.4	0.448	0.412	0.152	0.153	19.2	4.03	41.8	39.3	0.687	0.703	0.24	0.24	14.8
215	BHIMABAI TAKKALERI	73	F	126580	R	2.61	25.7	26.7	0.329	0.343	0.126	0.148	14.5	3.99	35	36.1	0.6	0.755	0.22	0.234	11.6
216	BAPU	75	M	125396	L	2.62	28.5	28.3	0.338	0.463	0.138	0.139	12.8	4.03	34.4	35.6	0.609	0.761	0.252	0.224	10.5
217	MAHADEVI TOTAD	56	M	125621	L	2.4	26.2	25	0.423	0.512	0.15	0.148	17.9	3.98	34.5	35.5	0.571	0.679	0.24	0.226	11.3
218	VEERAMMA	76	F	126511	L	2.69	29.2	31.4	0.546	0.485	0.148	0.143	19.9	4.09	41.3	39.5	0.714	0.566	0.239	0.218	14.7
219	HUGAPPA	63	M	126520	R	2.36	26.2	27	0.511	0.438	0.142	0.124	18.4	4.08	39.7	39.9	0.76	0.623	0.241	0.255	14.1
220	GOMALABAI LAXMAN	62	F	126500	L	2.82	27.8	27.2	0.373	0.413	0.146	0.132	17	4.11	40	39.2	0.769	0.764	0.236	0.242	13.3

221	LALASAB ISAMAILSAB	71	M	126502	R	2.82	24.5	27.4	0.526	0.396	0.147	0.151	19.8	4.01	38.2	35.7	0.606	0.597	0.245	0.254	13.8
222	ANDALAWWA	70	F	126507	L	2.98	30.2	30.1	0.538	0.427	0.137	0.133	15	4.09	36.6	35.8	0.696	0.76	0.255	0.248	11.4
223	MALLAPA KOTI	75	M	136305	L	2.52	24.5	29.7	0.553	0.348	0.118	0.142	13.9	4.11	40.5	39.5	0.654	0.701	0.253	0.239	11.6
224	HUSENSAB NADAF	56	M	137418	R	2.29	29.1	28.9	0.513	0.38	0.145	0.125	18.3	3.89	38.7	36.8	0.567	0.772	0.244	0.252	15.6
225	KASTURI BAI DONUR	65	F	136295	R	2.79	32.2	27.8	0.394	0.389	0.137	0.143	16.8	4.08	36.6	39.8	0.725	0.617	0.25	0.235	12.5
226	MAHADEVI BIDARI	70	F	136289	R	2.29	30.7	25.9	0.523	0.329	0.147	0.141	14.1	3.87	41.5	37.2	0.653	0.702	0.227	0.242	11.4
227	GURULINGAWWA	65	F	136294	L	2.91	24.4	27.4	0.543	0.338	0.133	0.139	14.7	4.12	39.8	35.4	0.743	0.602	0.235	0.225	11.3
228	PARABAI PAWAR	65	F	149202	L	2.33	29.6	25.2	0.321	0.5	0.148	0.133	12.5	4.11	38.5	41	0.603	0.809	0.253	0.22	10.4
229	RUPIBAI RATHOD	60	F	133597	R	2.7	32.6	26.2	0.476	0.387	0.13	0.124	20.7	3.85	35.3	40	0.584	0.714	0.247	0.238	14.6
230	ROSANBI KALAL	65	F	149481	L	2.56	28.7	25.7	0.344	0.536	0.139	0.132	17.3	3.86	40.8	40.5	0.74	0.773	0.256	0.226	15.2
231	MAMTAZ DULLA	60	F	149761	L	2.82	27.1	31.8	0.531	0.338	0.132	0.129	15.2	3.87	42.1	39.6	0.564	0.801	0.237	0.222	13.1

232	MUTABA I JADHAV	60	F	139094	R	2.73	24.1	30.2	0.48	0.415	0.125	0.133	15.6	3.98	35.4	37.6	0.769	0.691	0.242	0.242	11.2
233	GANGAL ABAI RATHOD	65	F	149206	L	2.99	27.5	30.9	0.5	0.537	0.119	0.148	18.8	4.09	41.5	36.2	0.755	0.695	0.22	0.221	13.7
234	SHIVANA ND HULLAR	72	M	69273	L	2.49	29	25.2	0.412	0.349	0.145	0.153	19.4	3.85	37.7	40.3	0.666	0.759	0.223	0.227	15.2
235	CHANDR ASEKAR PUJARI	75	M	167640	L	2.36	24.4	29	0.434	0.494	0.152	0.121	20.5	3.89	38	40.4	0.608	0.584	0.23	0.22	16.9
236	LAXMIBA I CHOORI	65	F	167153	L	2.38	32.5	28	0.542	0.527	0.128	0.135	15.4	4.02	39.6	36.9	0.618	0.786	0.226	0.223	11.3
237	SIDDAPP A SOLAPUR	67	M	167163	M	2.51	29	28.9	0.474	0.427	0.149	0.14	15.8	3.91	34.4	40.5	0.654	0.752	0.243	0.253	14.2
238	ASHABI NADAF	67	F	200371	R	2.84	32.1	31.5	0.523	0.35	0.144	0.146	15	4.02	39.9	35.4	0.581	0.725	0.231	0.241	11.7
239	SHARAN APPA HUGAR	60	M	201320	R	2.67	25.8	30.9	0.547	0.366	0.144	0.133	18.2	3.96	40.5	40.8	0.775	0.685	0.235	0.243	11.5
240	SHAKUN ATALA AIKKALLA	55	F	201899	R	2.65	32.2	25.1	0.54	0.537	0.122	0.14	15.7	4.09	36.2	38	0.713	0.743	0.249	0.251	10.6
241	SUSILAB AI NIMBAR AGI	60	F	201883	R	2.29	26.5	26.2	0.394	0.404	0.132	0.14	18.1	3.97	35.8	39.3	0.607	0.668	0.238	0.23	11.4
242	NAGUBAI BOLAKOT AGI	72	F	201898	L	2.64	31.5	26	0.457	0.556	0.145	0.151	13.6	3.96	35.2	38.2	0.805	0.763	0.253	0.251	11.3

243	LAXMIBAI SHIVASARAN	50	F	201890	R	2.42	29.8	24.9	0.365	0.386	0.138	0.153	20.3	3.91	34.5	36.8	0.692	0.81	0.24	0.243	12.3
244	BANASIDDHA JADHAV	75	M	201851	L	2.32	28	25.2	0.345	0.51	0.148	0.129	19.4	3.98	36.5	39.5	0.63	0.694	0.253	0.25	15
245	AKKUTAI NAIK	52	F	201941	L	2.81	24.2	27.8	0.416	0.545	0.139	0.118	12.7	3.89	36	37.7	0.781	0.65	0.247	0.251	9.4
246	SANTAVVA KACHERI	60	F	210918	L	2.81	32.1	29	0.391	0.354	0.148	0.121	20.7	4.01	35.7	37.8	0.676	0.747	0.257	0.222	12.1
247	PARASAPPA SULTANPUR	55	M	210927	R	2.64	30.1	26.4	0.484	0.508	0.134	0.119	18.8	3.88	37	38.4	0.603	0.679	0.234	0.226	13.3
248	DYAMAWA BIJJUR	60	F	210953	L	2.67	27.7	26.5	0.544	0.383	0.121	0.142	12.5	3.98	36.1	38.7	0.81	0.755	0.243	0.234	12.3
249	NINGAMMA SINDGI	63	F	224418	R	2.72	24	31.1	0.334	0.385	0.146	0.123	15.6	3.97	34.9	39.7	0.575	0.568	0.245	0.25	9.4
250	SUGANDA DESAI	70	F	4748	L	2.9	27.4	31.6	0.467	0.41	0.153	0.121	14.7	4.13	41.1	36.1	0.574	0.71	0.243	0.25	13.1
251	NINGAPPA BANTANUR	70	M	229912	R	2.95	31	26.2	0.489	0.499	0.148	0.145	14.3	4.11	41.2	39	0.687	0.749	0.251	0.224	11.3
252	MALLAVVA RAMAPPA	64	F	229942	L	2.85	29.8	30.9	0.452	0.53	0.133	0.141	19.4	4.09	40.8	36.5	0.786	0.803	0.252	0.242	13

253	LAXMIBAI BALI	71	F	51572	R	2.84	31.4	31.9	0.337	0.34	0.136	0.14	13.2	4.08	39	36.9	0.762	0.626	0.229	0.257	10.4
254	SOMAVVA LAXMANAPPA	65	F	228769	R	2.38	29.6	29.8	0.382	0.458	0.152	0.129	14.8	4.06	42.1	39.9	0.671	0.748	0.225	0.249	10.3