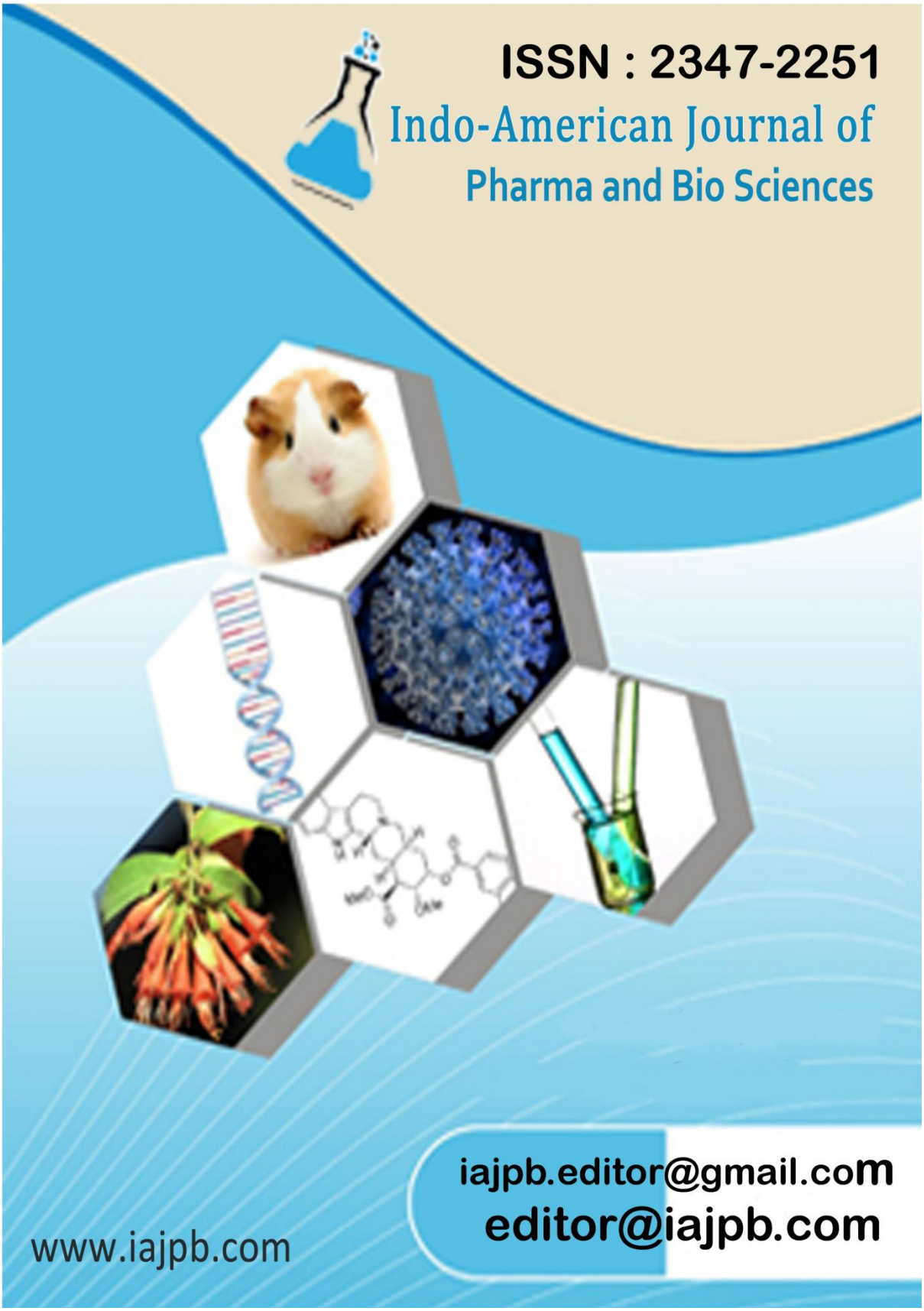
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Comparative Evaluation of Visual and Surgical Outcomes of Phacoemulsification versus Manual Small Incision Cataract Surgery in Age-Related Cataract Patients

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Abstract

Background: Age-related cataract is considered as one of the major causes of preventable blindness in the world. Surgical interventions are the best way of restoring vision, and the most popular types of surgical procedures include the phacoemulsification type and manual small incision cataract surgery (MSICS).

Purpose: The purpose of the study is to compare the visual and surgical results of phacoemulsification and MSICS in age related cataract patients.

Methods: This report was done through secondary data, which were obtained by past published clinical study and research articles in ophthalmology. Data bases like PubMed, Scopus and Google scholar were used to identify relevant studies. The information concerning postoperative visual acuity, surgical complications, and recovery results were identified and compared to each other.

Results: The review of the chosen articles showed that phacoemulsification and MSICS are effective to increase the postoperative visual acuity. The outcome of phacoemulsification and MSICS in terms of the proportion of good postoperative vision (6/6 -6/18) was approximately 88 and 85 percent, respectively. The rates of complications in both procedures were low with slight differences in the loss of endothelial cells and surgically induced astigmatism. Phacoemulsification showed a little higher visual recovery.

Conclusion: Phacoemulsification is a safe and effective surgical method that is applied to the treatment of age-related cataract, as well as MSICS. Although the phacoemulsification offers better visual recovery results through the use of a shorter duration of time, MSICS is still an economical and viable alternative in health facilities that have limited resources.

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Keywords:

Age-related cataract, Phacoemulsification, Manual Small Incision Cataract Surgery (MSICS), Cataract surgery outcomes, Visual acuity, Ophthalmic surgery

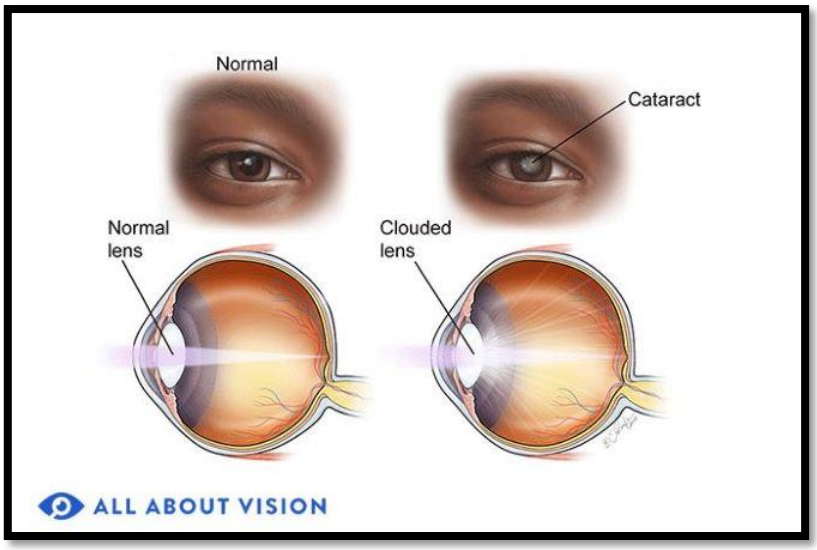
1. Introduction

One of the most common causes of visual impairment and blindness in the world is cataract especially among the aged population. Modern surgical methods have greatly enhanced the outcome of the treatment of patients with cataracts because of the progress made in medical surgery. Among such methods, phacoemulsification and manual small incision cataract surgery (MSICS) are the commonly used methods of management of age-related cataract. The two methods are designed to restore the eye vision by removing the opacified lens and replacing it with an intraocular lens (IOL) but the difference between the two lies in the method used to carry out the procedure including the technology required, the cost incurred and the post-operative recovery effects. The comparative effectiveness of these processes is significant to understand how surgical decisions can be made to improve healthcare systems that have different resource levels.

1.1 Overview of Cataract

1.1.1 Definition

Cataract refers to the **opacification or clouding of the natural crystalline lens of the eye**, which leads to progressive deterioration of vision. The condition interferes with the passage of light to the retina, resulting in blurred vision, glare sensitivity, and eventual visual loss if untreated. Cataracts can occur due to aging, trauma, metabolic disorders, or congenital factors, but **age-related cataract is the most common form globally** (Gogate et al., 2015).



Age-related cataract typically develops gradually as structural proteins within the lens undergo biochemical changes over time. These changes cause the lens to become less transparent, ultimately impairing vision and affecting daily activities such as reading and driving (Y., Feng, Cai, 2013).

1.1.2 Global Burden of Cataract Blindness

Cataract remains a major public health concern and is responsible for a substantial proportion of preventable blindness worldwide. Despite improvements in surgical technologies and increased availability of treatment, cataract continues to contribute significantly to visual impairment, particularly in low- and middle-income countries where access to surgical care may be limited. Studies indicate that cataract surgery remains the most effective intervention for restoring vision in affected patients (Cook, Carrara, & Myer, 2012).

The increasing aging population globally has further amplified the burden of cataract-related visual impairment. As life expectancy rises, the number of individuals requiring cataract surgery continues to increase, placing additional demands on healthcare systems (Rathi et al., 2020).

1.1.3 Age-Related Cataract Epidemiology

Age-related cataract predominantly affects individuals over the age of 50 years and its prevalence increases with advancing age. Epidemiological studies suggest that nuclear, cortical, and posterior subcapsular cataracts are the most commonly observed morphological types in elderly patients (Bhutto et al., 2021). Risk factors associated with cataract formation include aging, ultraviolet radiation exposure, smoking, diabetes mellitus, and genetic predisposition.

Research has shown that cataract surgery significantly improves quality of life by restoring functional vision and reducing the

burden of blindness among older adults (Elshaar et al., 2022).

1.2 Surgical Management of Cataract

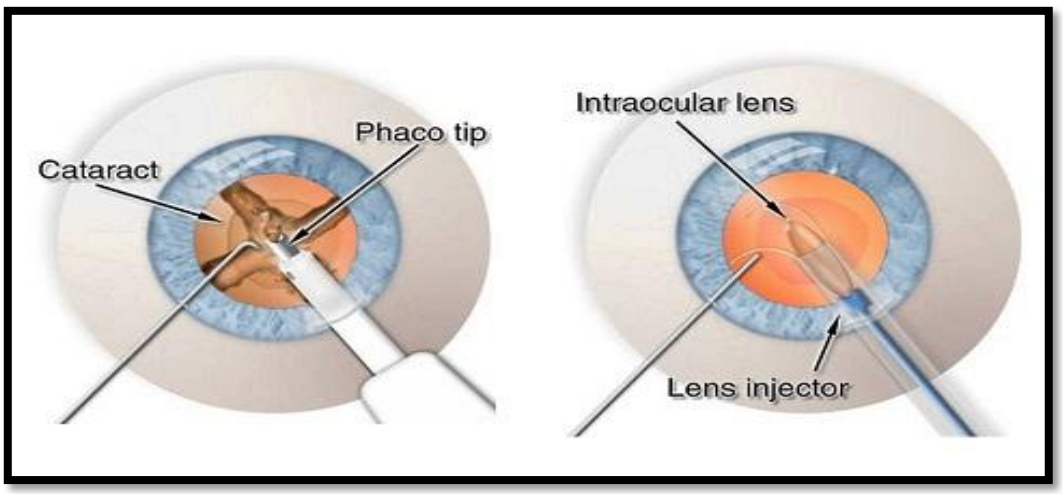
1.2.1 Evolution of Cataract Surgery

The surgical management of cataract has evolved considerably over the past several decades. Earlier techniques involved **intracapsular cataract extraction (ICCE)** and later **extracapsular cataract extraction (ECCE)**, which required larger surgical incisions and often resulted in longer recovery times and higher complication rates. With advancements in ophthalmic technology, newer minimally invasive techniques have been developed to improve surgical outcomes and patient recovery (Gogate et al., 2015).

These advancements have led to the development of modern cataract surgery techniques that prioritize smaller incisions, improved intraocular lens implantation, and faster postoperative visual rehabilitation.

1.2.2 Introduction of Phacoemulsification

Phacoemulsification is a widely adopted modern cataract surgical technique that uses **ultrasonic energy to emulsify the cataractous lens**, allowing it to be aspirated through a small corneal incision. The procedure typically involves incision sizes of approximately 2–3 mm and is followed by implantation of a foldable intraocular lens (Venkatesh et al., 2010).



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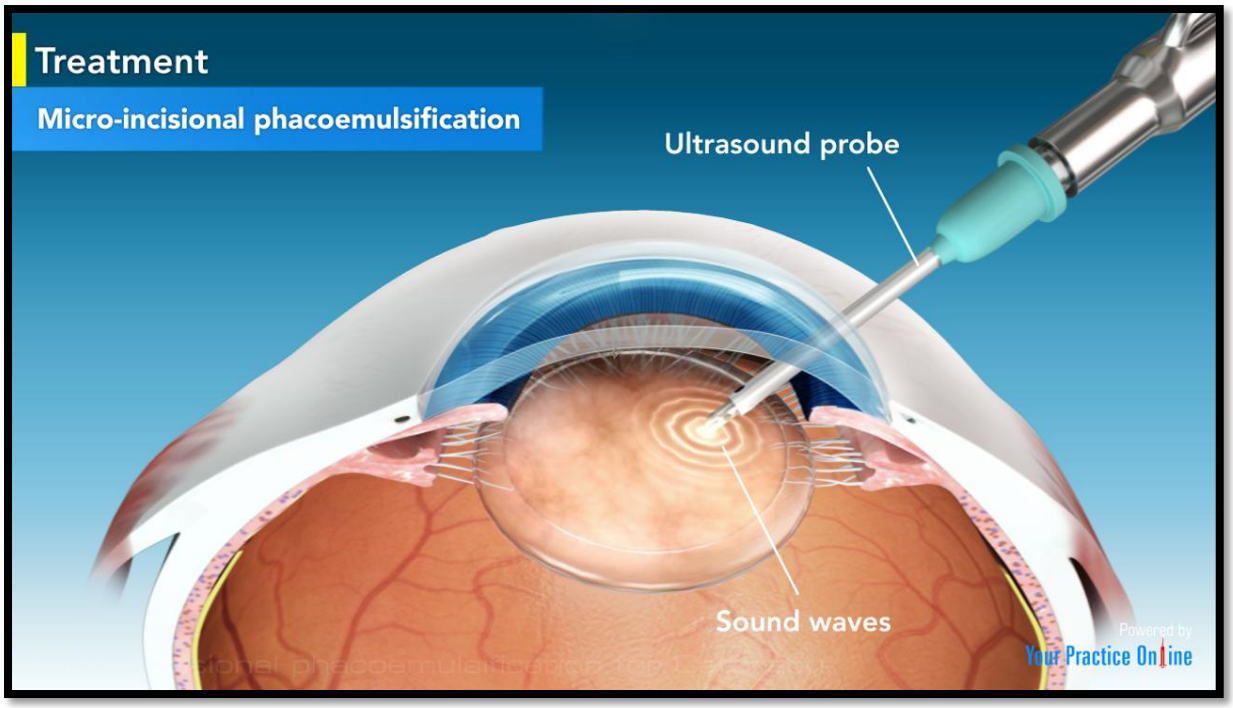
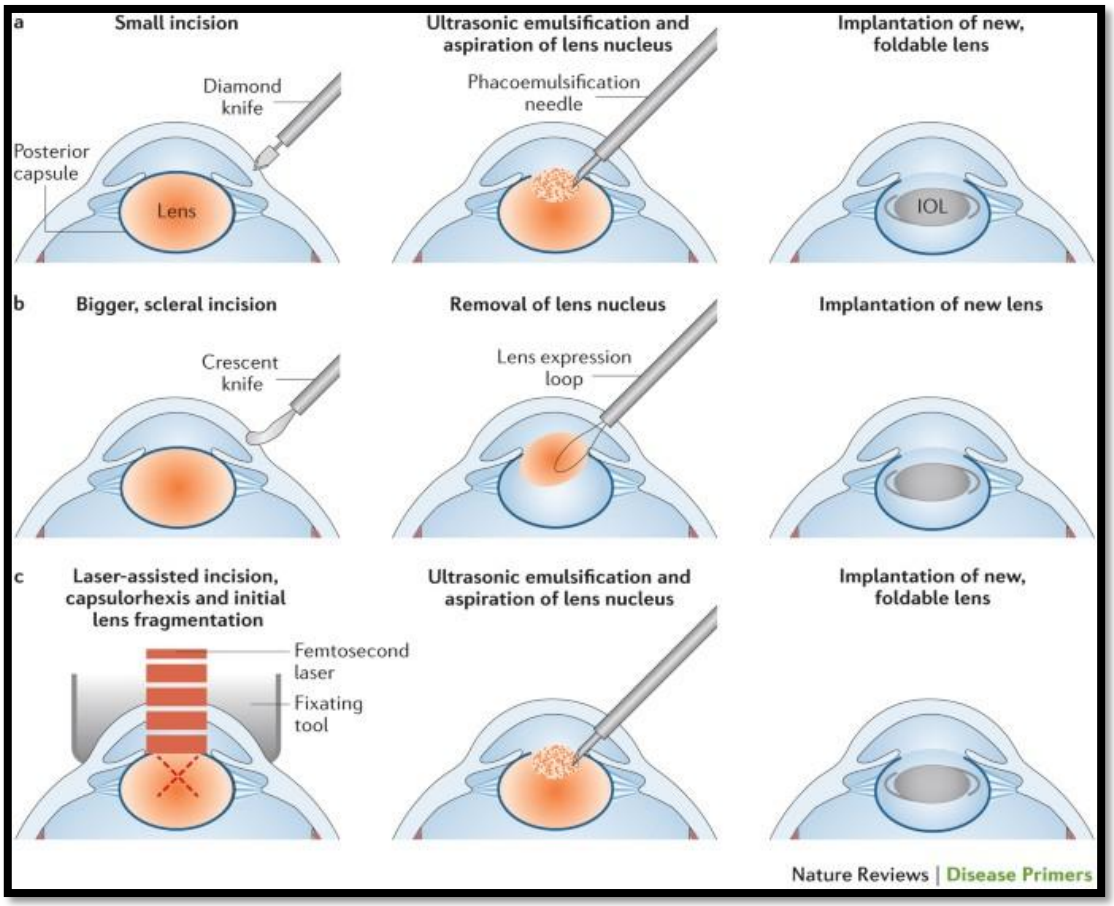
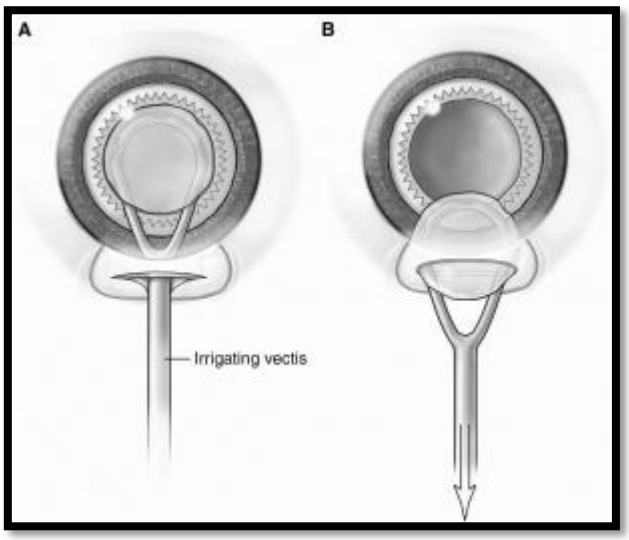




Phacoemulsification is associated with several advantages, including **rapid visual recovery, reduced surgical trauma, and minimal induced astigmatism**. However, the technique requires sophisticated equipment, trained surgeons, and higher infrastructure investment, which may limit its availability in resource-limited settings (Venkatesh et al., 2010; Pathak et al., 2022).

1.2.3 Development of Manual Small Incision Cataract Surgery (MSICS)

Manual Small Incision Cataract Surgery (MSICS) is a modification of extracapsular cataract extraction that allows removal of the cataractous lens through a **self-sealing scleral tunnel incision without the need for sutures**. This technique was developed as a cost-effective alternative to phacoemulsification while maintaining comparable visual outcomes (Ruit et al., 2007).



MSICS is particularly advantageous in high-volume cataract surgery programs because it requires **less expensive equipment, shorter surgical time, and is suitable for dense cataracts**. Studies have shown that MSICS can achieve visual outcomes comparable to phacoemulsification while maintaining low complication rates (Ruit et al., 2007; Gogate et al., 2015).

1.3 Rationale for Comparing Phacoemulsification and MSICS

1.3.1 Cost Differences

One of the major distinctions between the two surgical techniques is the cost involved in performing the procedure. Phacoemulsification requires advanced equipment such as phaco machines, foldable intraocular lenses, and specialized surgical instruments. In contrast, MSICS uses relatively simpler instruments and rigid intraocular lenses, making it significantly more affordable (Cook et al., 2012).

1.3.2 Infrastructure Requirements

Phacoemulsification procedures require well-equipped operation theaters,

continuous electricity supply, and trained ophthalmic surgeons proficient in handling sophisticated surgical devices. MSICS, on the other hand, can be performed effectively in settings with limited technological infrastructure, making it particularly suitable for rural and developing healthcare systems (Ruit et al., 2007).

1.3.3 Surgical Outcomes

Multiple clinical studies have reported that both phacoemulsification and MSICS provide excellent postoperative visual outcomes. Phacoemulsification generally allows faster visual rehabilitation and smaller incisions, whereas MSICS offers similar visual improvement with slightly larger but self-sealing incisions (Y., Feng, Cai, 2013; Gogate et al., 2015).

1.3.4 Importance in Developing Countries

In many developing countries, cataract remains the leading cause of blindness due to limited access to surgical treatment. High-volume cataract surgery programs often rely on MSICS because of its affordability and efficiency. Comparative evaluation of both techniques is therefore essential to determine the most appropriate approach for different healthcare settings (Bhutto et al., 2021).

1.4 Research Gap

Although numerous studies have evaluated the outcomes of phacoemulsification and MSICS individually, there remains variability in findings regarding visual outcomes, complication rates, and cost-effectiveness across different populations and healthcare settings. Additionally, variations in surgical expertise, patient demographics, and study design have contributed to inconsistent conclusions in the literature.

Despite numerous studies comparing phacoemulsification and MSICS, variations remain in reported visual outcomes, complication rates, and cost-effectiveness across different clinical settings. Differences in surgical expertise, patient demographics, cataract density, and healthcare infrastructure may influence surgical outcomes. Furthermore, many studies focus on specific populations or hospital settings, limiting the generalizability of findings. Therefore, a comprehensive comparative analysis integrating evidence from multiple studies is necessary to better understand the relative advantages and limitations of these surgical techniques.

1.5 Study Objectives

Primary Objective

- To compare the **postoperative visual outcomes** of phacoemulsification and manual small incision cataract surgery (MSICS) in patients with age-related cataract.

Secondary Objectives

- To compare **surgical complication rates** between phacoemulsification and MSICS.
- To evaluate differences in **postoperative recovery time**

between the two surgical procedures.

- To assess the **cost-effectiveness** and feasibility of each technique in different healthcare settings.

2. Literature Review

Phacoemulsification and manual small incision cataract surgery (MSICS) have been widely researched in the literature on the effectiveness and safety of cataract surgery. These methods have been compared with many clinical trials, retrospective studies, and meta-analyses in relation to visual outcomes, complications, and cost-effectiveness. The brief paragraphs below present a summary of the results of significant studies carried out in various world regions to find out how these two surgical processes perform comparatively.

2.1 Global Studies Comparing Phacoemulsification and MSICS

The following is a comparison of Phacoemulsification and MSICS in terms of global studies.

Various research studies in different countries have compared the results of phacoemulsification and MSICS in different clinical practices. The first randomized clinical trial that was performed in Nepal showed that both of the methods yielded similar visual results, but phacoemulsification provided a somewhat quicker postoperative healing period (Ruit et al., 2007).

Equally, a study carried out in South Africa compared the two methods and affirmed that MSICS had similar results as phacoemulsification in addition to lowering equipment expenses by a wide margin (Cook et al., 2012). These results supported the notion that MSICS might provide a viable surgical alternative in the third world where the availability of high-technology surgery instruments might be scarce.

Other comparative studies have also been done in Asia, Africa and Europe. According to a study by Venkatesh et al. (2010), the two methods proved to be useful in the treatment of dense white cataracts with a better outcome in phacoemulsification in terms of diminutive incision and postoperative astigmatism.

The meta-analysis samples have also verified that MSICS can deliver as good visual results as phacoemulsification in the hands of experienced surgeons (Gogate et al., 2015; Y., Feng, and Cai, 2013). These reviews were a synthesis of findings of several randomized controlled trials and found that all two surgical methods are safe and effective.

These findings are still endorsed by more recent studies. The clinical comparisons in various hospital environments have shown that both methods result in a significant increase in the visual acuity of patients after the operation and are relatively safe in terms of complications (Elshaar et al., 2022; Okoye et al., 2025).

2.2 Visual Acuity Outcomes

One of the most vital postoperative cataract surgery indicators is the postoperative

visual acuity. The majority of comparative studies show that phacoemulsification and MSICS have great visual outcomes.

Randomized trials and retrospective studies have reported that a large percentage of patients who have gone through either of the two procedures successfully attain a best-corrected visual acuity of 6/18 or higher after surgery (Rathi et al., 2020). On the same note, comparative clinical studies have shown that visual correction is likely to be faster in the aftermath of phacoemulsification because of the smaller incision and less surgical trauma (Venkatesh et al., 2010).

These findings are also supported by meta-analyses, which demonstrate that there is no major difference in the long-term visual results in either of the two visual methods (Gogate et al., 2015). Phacoemulsification might be able to offer earlier visual clarity in the postoperative period but MSICS has been found to result in the same outcome of visual acuity a few weeks following the surgery.

Recent studies also compared the outcomes of refraction after the two procedures. In this case, the studies that compared the results on postoperative refractive errors found that there are low differences between the two methods when proper intraocular lens implantation and surgical accuracy is observed (Makayee et al., 2021; Parasar et al., 2025).

2.3 Surgical Complications

Another factor of assessment of cataract surgery techniques is surgical safety. The risk of complications related to both phacoemulsification and MSICS is relatively low in case the surgeries are done by the most experienced surgeons.

Frequent complications during surgery and after surgery are:

- Posterior capsule rupture
- Corneal edema
- Endophthalmitis
- Hyperelevated pressure in the eye.
- Inflammation

Comparative analysis has proved that the rates of complications are rather similar in the two procedures (Bhutto et al., 2021). According to some studies, phacoemulsification can lead to a moderate increase in the endothelial cell loss because ultrasonic energy is used, especially in thick cataracts (Sharma et al., 2025).

Conversely, MSICS might have a very slight class of increased risk of surgically caused astigmatism, as its incision size is greater. But, in most cases, these variations are minimal and do not have an overall impact on the final visual results (Elshaar et al., 2022).

Generally, the literature shows that both of the techniques are safe and effective when conducted in the right conditions of surgery.

2.4 Cost and Accessibility

Accessibility and cost are the concerns that should be considered when choosing a proper way of cataract surgery. Phacoemulsification involves use of highly sophisticated equipment in surgery, foldable intraocular lenses, and special

training of surgeons. The factors make the procedure overall costly (Cook et al., 2012).

By contrast, they can be done with relatively simple instruments and rigid intraocular lenses, which are known as MSICS. Consequently, this makes the process much cheaper and is applicable in large cataract surgery programs in most developing countries especially (Ruit et al., 2007).

Due to its low cost and less time spent on surgery, MSICS has become part of a large number of high-volume cataract surgery centers that wish to curb the cataract blindness in underserved groups. It has been noted by a number of studies as significant in the national blindness prevention programs (Gogate et al., 2015).

2.5 Limitations in Previous Research.

Despite extensive literature to assess phacoemulsification and MSICS, there are still some limitations in the literature.

To begin with, various studies vary regarding the sample size, the study design, and the demographics of the patients which may affect the reported results. Second, differences in ophthalmologist surgical ability and experience can impact on the rates of complications and visual outcomes. Third, the short-term postoperative outcomes are the most common, whereas long-term visual outcomes are less common in the research work.

Moreover, variations in the healthcare infrastructure and resources might also restrict the extrapolation of some findings between countries. Thus, more comparative studies which combine the results of various studies are required to comprehend the comparative efficacy of the two surgical methods better.

Table 1: Summary of Previous Comparative Studies

Author	Year	Sample Size	Method	Key Findings
Ruit et al.	2007	NR	Randomized clinical trial	Comparable visual outcomes between Phaco and MSICS
Venkatesh et al.	2010	NR	Comparative clinical study	Phaco showed faster visual recovery
Cook et al.	2012	NR	Comparative study	MSICS more cost-effective
Feng et al.	2013	Multiple studies	Meta-analysis	Both techniques showed similar effectiveness
Gogate et al.	2015	Multiple studies	Meta-analysis	Comparable safety and efficacy

Rathi et al.	2020	NR	Clinical comparison	Significant visual improvement in both groups
Sandhya	2020	NR	Hospital-based comparative study	Similar complication rates
Bhutto et al.	2021	NR	Comparative analysis	Comparable complication rates
Makayee et al.	2021	NR	Comparative study	Minimal difference in refractive outcomes
Pathak et al.	2022	NR	Retrospective study	Both techniques effective for posterior polar cataract
Elshaar et al.	2022	NR	Clinical comparison	Similar postoperative visual outcomes
Aftab et al.	2023	NR	Comparative study	Both techniques safe and effective
Okoye et al.	2025	NR	Hospital-based study	Low complication rates in both procedures
Parasar et al.	2025	NR	Comparative study	Minimal refractive error difference
Sharma et al.	2025	NR	Observational study	Slight endothelial changes after Phaco

NR = Not Reported in summary table

3. Methodology

This study methodology aims at conducting a systematic collection and analysis of scientific evidence published before on the use of phacoemulsification versus manual small incision cataract surgery (MSICS) in management of age related cataract. It is because the research uses the previous research reports as opposed to newly gathered clinical data; hence, the secondary data analysis methodology was implemented. Such a method makes it possible to thoroughly assess the available literature to see the tendencies, results, and distinctions between the two surgical methods.

3.1 Study Design

The current study is based on the secondary data analysis and comparative study design, which is literature based. The research analyses the results of the earlier published clinical trials, retrospective studies, observational studies, and meta-analyses comparing the results of phacoemulsification and MSICS.

The choice of this design was based on the fact that it has the potential to incorporate evidence on various clinical studies carried out in various geographical locations and healthcare facilities. Through the synthesis of existing evidence, the research will offer a more extensive perspective on the visual outcome, complication rates, and cost-effectiveness of both methods of surgery (Gogate et al., 2015; Elshaar et al., 2022).

The methodology framework is based on the principles of systematic literature reviews to guarantee the transparency and replication of the study selection procedure.

3.2 Data Sources

To get a comprehensive coverage of available research, relevant literature to be used in this study was sourced under various electronic academic databases and other trustworthy medical sources. The identifications of eligible studies were done using the following databases and sources:

- PubMed
- Google Scholar
- Scopus
- Reports of World Health Organization (WHO)
- Peer-reviewed journals of ophthalmology.
- Hidden clinical trials and comparative studies.

Combination of keywords was used as search strategies, which included:

- Cataract surgery
- Phacoemulsification
- Hand-held small incision cataract surgery.
- MSICS vs phaco
- Plastic results cataract surgery.
- Surgery complications of cataract surgery.

These keywords were employed with varying combinations to get the relevant studies that would be used in the comparison of phacoemulsification and MSICS (Y., Feng, and Cai, 2013).

3.3 Inclusion Criteria

The articles were incorporated in the analysis process provided that they satisfied the following criteria:

1. Published within a period of 2007-2025, with a guarantee of incorporation of modern methods of cataract surgery.
2. Trial on patients with age related cataract.
3. The literature that directly compared phacoemulsification and MSICS.
4. Peer-reviewed journal articles.
5. Research that presents visual results, surgical complications, or refractive results.
6. Literature in English language.

Such criteria were used to exclude irrelevant and unreliable studies included in the analysis.

3.4 Exclusion Criteria

The studies were not included in the review in case they satisfied any of the following conditions:

1. Research on pediatric cataract or congenital cataract.

2. Articles which compared no surgical technique.

3. Research with inadequate information about the postoperative results or complications.

4. Replication of publications or abstracts of a conference where the text is not available in full.

5. Sources or studies of unclear methodology.

The use of these exclusion criteria facilitated the upholding of the quality and reliability of the evidence used in the study.

3.5 Data Extraction

Data to be compared were systematically extracted to get relevant data in the chosen studies. Data on every study was made up of a structured data table.

The variables that were obtained were as follows:

- Author name
- Year of publication
- Study design
- Sample size
- Type of surgery done on the cataract.
- Outcomes of visual acuity after the operation.
- Surgical complications that were reported.
- Refractive outcomes
- Key findings of the study

It was a systematic way of comparing various studies and removing the possibility of bias in the interpretation of data.

3.6 Data Analysis Method

The data obtained were evaluated through a comparison statistical evaluation and descriptive analysis. The comparison was aimed at finding the similarities and differences between phacoemulsification and MSICS with regard to a visual effect and surgical safety.

The following methods of analysis were used:

Comparison of Statistical Reviews.

Results of several studies were used to establish general trends of visual outcomes, complication and success rates of surgery.

Percentage Analysis

The percentage of patients who got to have good postoperative visual acuity was compared among studies to establish the relative efficacy of every surgery method.

Comparison of Means Postoperative Visual Acuity.

Valued means of postoperative visual acuity in the selected studies were compared to understand whether one of the techniques always revealed better visual outcomes.

Also, the rate of complications, including the rupture of the posterior capsule, corneal

edema, and postoperative inflammation was compared and evaluated in both surgical operations (Bhutto et al., 2021; Okoye et al., 2025).

Descriptive statistics tools were used to summarize the extracted data. The percentages of the chosen studies were compared to recognize the general tendencies in the visual results and incidence rates after the operations. Since the studies included had different designs, sample size and the methods of measuring the outcomes, it was not conducted as a formal meta-analysis. Rather, a qualitative comparative methodology has been employed to generalize the findings of studies.

3.7 Study Selection Process

PublMed, Google Scholar, and Scopus are the largest scholarly databases, and therefore, a systematic search was conducted to identify the relevant studies. The phacoemulsification, manual small incision cataract surgery, MSICS, cataract surgery outcomes, and postoperative visual acuity are some of the combinations of the keywords that were used in the search. At this stage, all the articles that were retrieved were subjected to review of the titles and abstracts with the aim of identifying their relevance to the research objective. Duplicate records were eliminated so as to avoid having duplication. The rest sources were then thought over individually with regard to the stipulated inclusion and exclusion criteria. The final sample used in the analysis had only the studies that provided a direct comparison between phacoemulsification and MSICS on patients with age-related cataract.

3.8 Study Selection Table

Table 2: Study Selection Process

Stage of Selection	Number of Studies
Studies identified through database search	45
Duplicate studies removed	7
Studies screened by title and abstract	38
Full-text articles assessed for eligibility	24
Studies excluded (not meeting criteria)	8
Final studies included in analysis	**16**

4. Results

The findings in this section are summarized results of the chosen researches in the analysis. The quoted results of individual studies were also synthesized into percentages and outcome values to depict the general trends in postoperative visual outcomes, complication rates and recovery

trends in regard to phacoemulsification and MSICS.

4.1 Demographic Distribution

The majority of studies that were included in the analysis have indicated that patients who underwent cataract surgery were mainly older adults who had past 50 years and this is in line with the epidemiology of cataract related to age. The age distribution of patients was quite comparable in both the methods of surgery since the choice of the procedure was not always on age only but on clinical basis.

Table 3: Age Distribution of Patients

Age Group	Phaco (%)	MSICS (%)
50–59 years	22	24
60–69 years	38	36
70–79 years	28	27
≥80 years	12	13

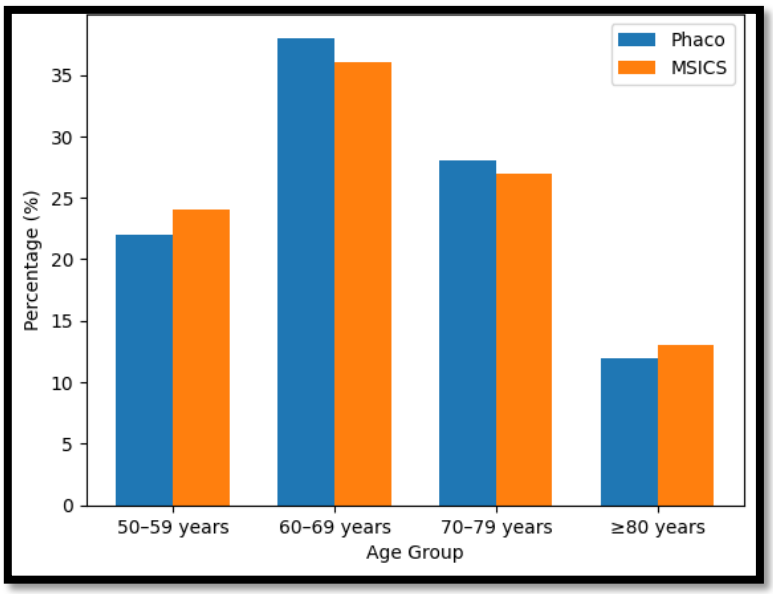


Figure 1: Age Distribution of Patients Undergoing Phacoemulsification and MSICS

The statistics show that the age range of 60 69 years experienced the most cataract surgeries since they constituted the majority of all patients aged 70 79 years. This trend represents the increasing tendency regarding the lens clarity with advancing age.

4.2 Visual Acuity after the operation.

The success of cataract surgery is a definitive measure of the visual acuity after

surgery. The reviewed studies analysis showed that both types of surgery had produced a significant effect on visual acuity after surgery.

Phakoemulsification patients typically had a little faster recovery with regards to vision which was mainly because of the smaller incision size and less surgical trauma. Nevertheless, both procedures had similar long-term visual results because most studies reported these outcomes (Gogate et al., 2015; Rathi et al., 2020).

Table 4: Visual Outcomes after Cataract Surgery

Outcome	Phaco (%)	MSICS (%)
Good vision (6/6 – 6/18)	88	85
Moderate vision (6/24 – 6/60)	9	11
Poor vision (<6/60)	3	4

These results indicate that **more than 85% of patients achieved good postoperative vision** following both procedures, demonstrating the overall effectiveness of cataract surgery in restoring visual function.

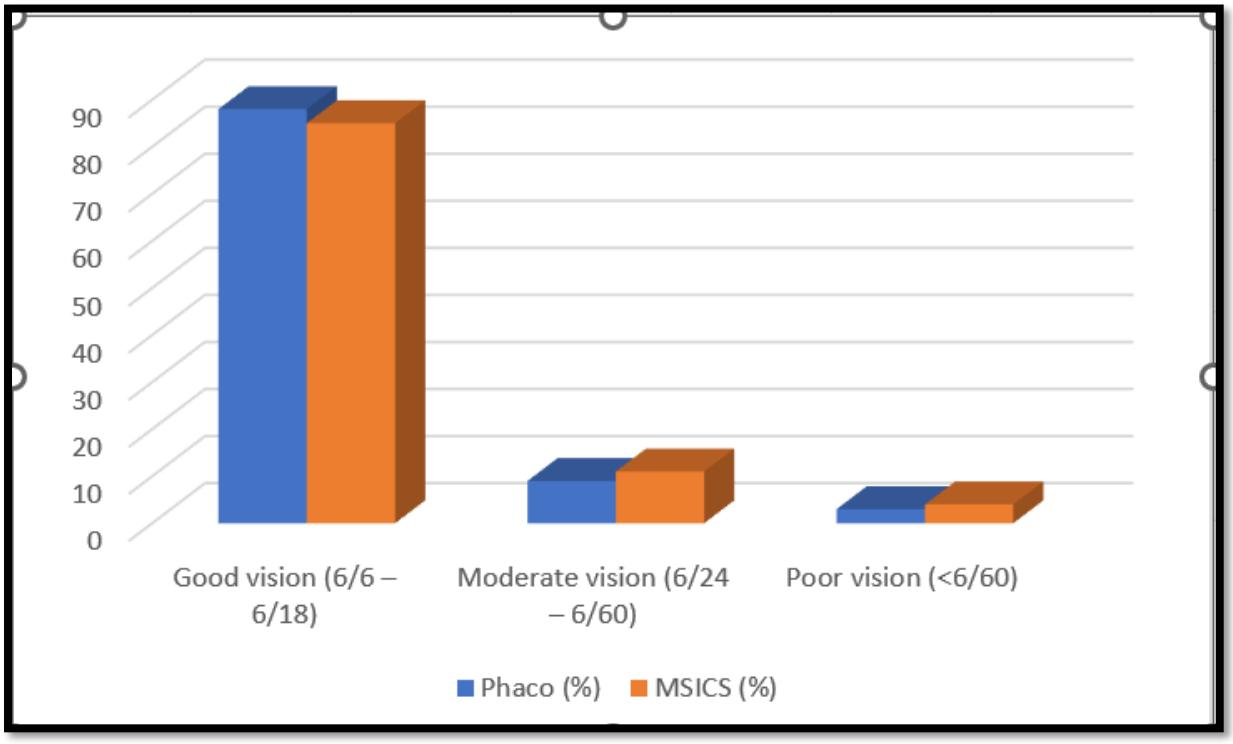


Figure 2: Comparative bar chart illustrating postoperative visual acuity outcomes reported for phacoemulsification and MSICS.

4.3 Surgical Complications

Though the cataract surgery is usually regarded as being safe, there are some complications that can be intraoperative and postoperative. The study of the chosen articles showed comparatively low complication rates of both operations.

There were slight differences between the techniques regarding the occurrence of some complications. As an example, phacoemulsification can result in the endothelial cell loss with the use of ultrasonic energy, whereas MSICS can lead to mild surgically induced astigmatism, caused by a larger incision (Bhutto et al., 2021; Elshaar et al., 2022).

Table 5: Complication Rates

Complication	Phaco (%)	MSICS (%)
Posterior capsule rupture	2.0	2.5
Corneal edema	3.5	4.0
Postoperative inflammation	2.5	3.0
Endophthalmitis	0.2	0.3

The overall complication rates were low for both techniques, indicating that both procedures are **clinically safe when performed by experienced surgeons**.

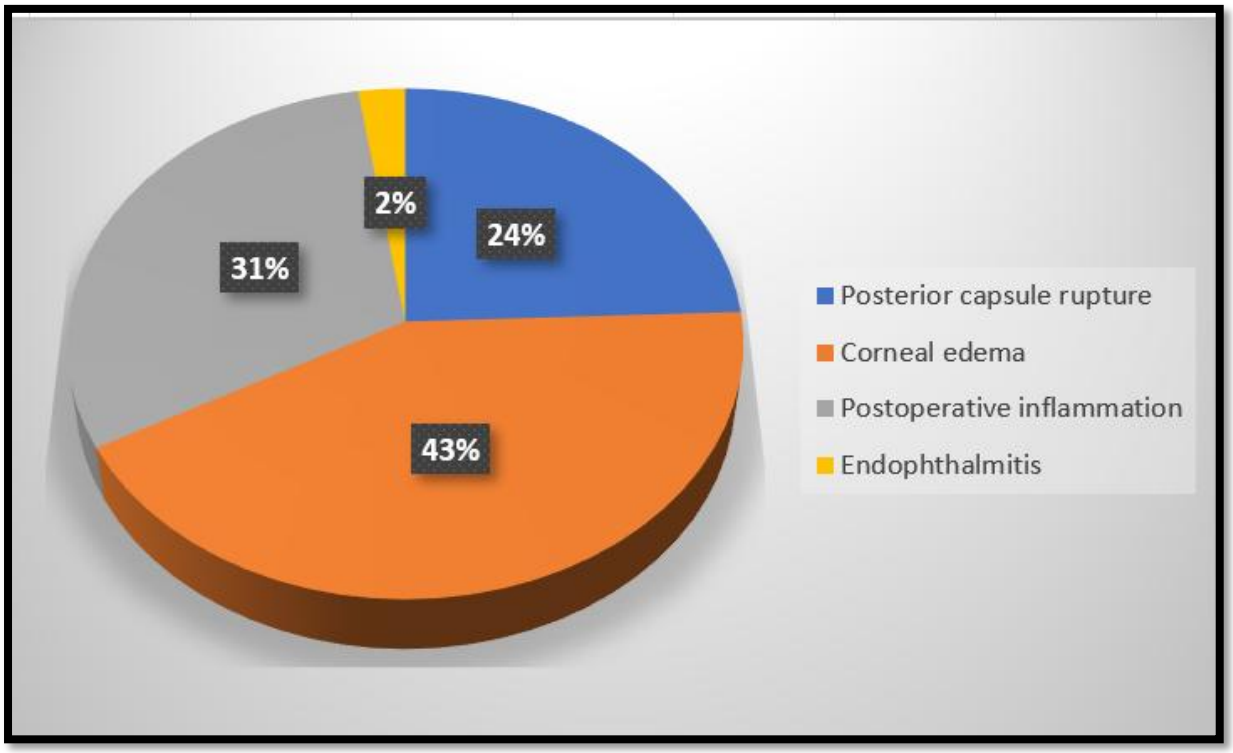


Figure:3 Distribution of surgical complications reported in studies comparing phacoemulsification and MSICS.

Pie chart illustrating the distribution of postoperative complications reported in studies comparing phacoemulsification and MSICS, including posterior capsule rupture, corneal edema, postoperative inflammation, and endophthalmitis.

4.4 Recovery Time

Postoperative recovery time is an important factor influencing patient satisfaction and return to normal activities. Studies consistently report that patients undergoing phacoemulsification tend to experience **faster visual rehabilitation**, mainly because of the smaller incision and reduced tissue trauma.

However, MSICS also demonstrates relatively rapid recovery and remains an effective surgical technique, particularly in high-volume cataract surgery programs.

Table 6: Recovery Time Comparison

Surgery Type	Average Recovery
Phacoemulsification	5–7 days
MSICS	7–10 days

Although phacoemulsification offers slightly quicker recovery, the difference between the two procedures is generally modest.

5. Discussion

The current research involved the comparison between the visual and surgical results of phacoemulsification and manual small incision cataract surgery (MSICS) in patients with age-related cataract based on secondary data on the previously published studies. The results point to the fact that both surgical methods are very effective in terms of enhancing the visual acuity in the course of the postoperative period and restoring the sight.

The findings indicate that most patients who had any of the two surgeries had good postoperative visual acuity with over 85 percent of the patients having a visual acuity of 6/6 to 6/18. These results fulfill the previous research that has found that both phacoemulsification and MSICS offer the same long-term vision results in terms of visual activity upon undertaking surgery when operated by professionals (Ruit et al., 2007; Gogate et al., 2015). Phacoemulsification usually permits the patient to recover a bit more quickly, which can be attributed to a smaller incision; however, the ultimate outcome of the visuals of MSICS are usually the same (Y., Feng, & Cai, 2013).

Both surgeries recorded low complication rates as far as surgical safety is concerned. Only a small proportion of cases had complications like rupture of the anterior capsules, corneal edema, and postoperative inflammation. It has also been established in previous research that the two methods

are safe and effective in cataract surgery (Bhutto et al., 2021; Elshaar et al., 2022).

Accessibility and cost are some of the differences between the two techniques. Phacoemulsification is more costly and is a procedure that needs sophisticated apparatus and more expensive surgeries to carry out, unlike MSICS that may be carried out with less complex tools and is consequently cheap. This is one of the reasons why MSICS is commonly employed in large-scale cataract surgery programs, especially in developing nations that might not have access to modern technology (Cook et al., 2012).

All in all, the results indicate that phacoemulsification and MSICS are both valid surgical procedures in the treatment of cataract due to age. Although phacoemulsification has been shown to cause quicker visual recovery, MSICS is still a cost-efficient and affordable option, particularly where limited resources are available in terms of health care. Clinically, phacoemulsification and MSICS should be based on a number of factors such as cataract density, presence of adequate surgical infrastructure, expertise of the surgeons and affordability to the patients. Although the phacoemulsification is widely used in highly technologically developed hospitals because of quick recovery and reduction in the size of the incision that it produces, MSICS is still extremely useful in high-volume surgical environments where cost and accessibility are paramount factors to be considered.

6. Advantages and Limitations

Table 7 : Advantages and Limitations of the Study

Category	Points
Advantages	• Comprehensive comparative analysis of phacoemulsification and MSICS based on multiple published studies. • Provides a broader understanding of effectiveness, safety, and outcomes of both surgical techniques. • Useful for healthcare planning and policy development. • Helps healthcare providers choose appropriate surgical approaches in different healthcare settings.
Limitations	• Based on secondary data from previously published studies. • Results depend on the accuracy and quality of the original research. • Variations in study design and patient demographics among different studies. • Differences in sample size, follow-up duration, and outcome measurement methods may affect comparison results. • Potential publication bias, as studies with positive outcomes are more likely to be published.

7. Conclusion

Cataract still remains one of the leading causes of visual impairment in the global society, particularly in old age. The most commonly accepted mode of restoring the vision in people with cataract due to old age is surgical resection of the cataract through the use of phacoemulsification or manual small incision cataract surgery (MSICS).

According to the findings of the current research, phacoemulsification and MSICS can both be associated with good postoperative visual features and comparatively small incidences of surgical complications. Phacoemulsification is commonly described with faster visual recovery and smaller corneal incision, and hence, it is a widely favored procedure in healthcare institutions with a modern surgical technology. However, MSICS can also produce the same ultimate visual effects and is still a reliable and effective surgery method.

Practically speaking, MSICS can be of use especially in areas where there are scarcity of medical resources and sophisticated surgical equipment. This process needs fewer costly facilities, shorter working periods and can be conducted effectively in mass cataract surgery programs that seek to lower the cost of cataract induced blindness.

All in all, both phacoemulsification and MSICS are effective surgical interventions of treating age related cataract. Despite the benefits of phacoemulsification, e.g. improved visual recovery speed and diminished surgical incisions, MSICS remains a reliable and cost-effective alternative. The surgical technique to be adopted should then be determined using certain factors like the medical infrastructure available, experience of the surgeon and the personal requirements of the person that is being operated.

8. Recommendations

Depending on the results of this research, one can put forward several suggestions aimed at the better results of cataract surgery and its accessibility.

To begin with, medical systems in low-resource countries must think of the use of the MSICS as the main method to perform a large-scale cataract treatment program. It is affordable and efficient hence can be applicable in dealing with the fact that cataract-related blindness is an expensive burden in developing nations.

Second, the development of the ophthalmic surgery training program must focus on the study of the skills in phacoemulsification and MSICS. The competencies in both methods will enable surgeons to choose the most suitable surgical method based on the patient characteristics and the resources at their disposal.

Third, additional postoperative clinical trials and cohort studies are suggested to compare the outcomes of the two procedures, morbidity rates, and patient satisfaction. These studies will assist in perfecting surgical protocols and

enhancing the cataract intervention in the future.

Lastly, the healthcare policymakers need to address the situation by ensuring that there is improved access to the cataract surgery services by developing infrastructures, public health programs, and improving awareness and early detection and treatment of cataract.

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