

Social impact indicators in patient diagnosed of senile cataract treated with phacoemulsification plus intraocular lens implantation

Indicadores de impacto social en pacientes diagnosticados de catarata senil tratados con facoemulsificación más implante de lente intraocular

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Abstract

Purpose: The aim of the study was to analyze indicators of social impact in patients with senile cataract treated with phacoemulsification and intraocular lens (IOL) implant. **Material and methods:** Patients ≥ 60 years, better corrected visual acuity (BCVA) ≥ 0.6 logarithm of the minimum angle of resolution (LogMAR) and senile cataract treated with PHACO + IOL for cases and incipient senile cataract without surgical treatment with MVCA < 0.6 LogMAR for controls. Exclusion criteria: pathologies that modify the quality of life. The WHOQOL-OLD test was applied: pre-surgical, 1 post-operative month, and 3 post-operative months. **Results:** Fifty-four controls and 56 cases were included in the study. The pre-operative BCVA was 1.57 ± 1.041 , 3rd month was 0.68 ± 0.7817 ($p < 0.001$). The results of the pre-operative WHOQOL-OLD survey versus the 3rd month: INT 12.96 versus 11.06 ($p < 0.0001$); DAD 10.48 versus 6.389 ($p < 0.00001$); SOP 12.07 versus 13.76 ($p < 0.0007$); and SAB 13.02 versus 8.648 ($p < 0.0001$). The survey of the 3rd month versus the controls: INT 9.66 versus 11.06 ($p < 0.001$); PPF 13.89 versus 12.39 ($p < 0.001$), and AUT 12.47 versus 10.15 ($p < 0.001$). **Conclusion:** Patients present an improvement in the BCVA that is reflected in the quality of life, this can be interpreted as positive results and should be taken into account to support the surgical indication.

Keywords: Older adults. Phacoemulsification. Quality of life. Visual acuity. WHOQOL-OLD.

Resumen

Objetivo: Analizar indicadores de calidad de vida en pacientes con catarata senil tratados con facoemulsificación más implante de lente intraocular. **Método:** Pacientes a partir de 60 años de edad, con agudeza visual mejor corregida (AVMC) ≥ 0.6 LogMAR y catarata senil tratada con facoemulsificación más implante de lente intraocular para casos y catarata senil incipiente sin tratamiento quirúrgico con AVMC < 0.6 LogMAR para controles. Criterios de exclusión: patologías que modificaran la calidad de vida. Se aplicó la encuesta WHOQOL-OLD en el preoperatorio y a 1 y 3 meses posquirúrgicos. **Resultados:** 54 controles y 56 casos. La AVMC preoperatoria fue 1.57 ± 1.041 , y al tercer mes 0.68 ± 0.7817 ($p < 0.001$). Los resultados de la encuesta preoperatoria en comparación con el tercer mes fueron: dominio de intimidad 12.96 vs. 11.06 ($p < 0.0001$); dominio de muerte y agonía 10.48 vs. 6.389 ($p < 0.00001$); dominio de participación social 12.07 vs. 13.76 ($p < 0.0007$); y dominio de capacidad sensorial 13.02 vs. 8.648 ($p < 0.0001$). Los resultados de la encuesta del tercer mes en comparación con los controles fueron: dominio de intimidad 9.66 vs. 11.06 ($p < 0.001$); dominio de actividades pasadas,

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presentes y futuras 13.89 vs. 12.39 ($p < 0.001$) y dominio de autonomía 12.47 vs. 10.15 ($p < 0.001$). **Conclusión:** Los pacientes presentan una mejora en la AVMC y en los resultados de la WHOQOL-OLD, por lo que deben ser tomados en cuenta para apoyar la indicación quirúrgica.

Palabras clave: Adultos mayores. Agudeza visual. Calidad de vida. Facoemulsificación. WHOQOL-OLD.

Introduction

Senile cataract is a disease of high global prevalence that partially or completely affects vision due to progressive opacity of the lens. It is the leading cause of blindness worldwide, which is why timely detection and treatment are the ideal management^{1,2}. However, this may be hardly feasible in developing countries or in communities lacking timely and quality medical care, where surgical treatment is not performed^{2,3}.

There are approximately 285 million visually impaired people in the world, out of whom, 39 million are blind and 246 million have low vision⁴. About 90% of global visual impairment is concentrated in emerging countries². In low- and middle-income countries, cataracts remain the leading cause of blindness³. Among the people with blindness, 82% are 50 years old or older, and nearly 80% of total global cases of visual impairment could be avoided or be amenable to the treatment^{4,5}.

In Mexico, several study groups have carried out investigations in the North and South of country³. In the State of Nuevo León, a prevalence of blindness of 1.53% was identified in people older than 50 years of age, and 48% of these cases of blindness were attributable to cataracts. In the State of Chiapas, a prevalence of blindness of 2.3% was identified in people aged 50 years or more, with 63% of these cases of blindness being attributable to cataracts⁶.

The presence of senile cataracts will cause progressive and painless low vision. As vision decreases, patients have restrictions for performing certain activities of daily living, such as preparation of food, personal hygiene, and reading^{7,8}. In addition, the individual is at higher risk of balance loss, falls, fractures, or any other type of physical injury. All of this can have an impact on the mental and physical well-being of the individual⁹. The doctor should inquire about these signs, since on them might instructions for surgical treatment fall.

Senile cataracts treatment is currently surgical; this surgery, thanks to ophthalmological microsurgery biomedical advances, has earned its place as a pillar in the treatment of cataracts¹⁰. It is highly important

emphasizing that, currently, there is no medical treatment that has tried to reduce the size, slow the progression, or prevent the appearance of a cataract¹¹.

The indication that is widely used for cataract surgery is a decrease in functional visual acuity for the patient that prevents him/her from properly carrying his/her daily activities¹². It is important mentioning that there are few contraindications for cataract surgery in an older adult, as long as stable systemic conditions exist^{10,12}.

For health professionals, health-related quality of life should be an essential aspect to be evaluated, which is why the use of clinimetric instruments for its measurement is a promise in areas such as treatment adherence, satisfaction with provided services, and effectiveness of medical interventions and health-care programs^{13,14}. In Mexico, research reports aimed at the study of quality of life and its social impact are scarce¹⁵.

The World Health Organization Quality of Life (WHOQOL) assessment questionnaire has been effectively used for more than 35 years¹⁶. There are versions deriving from this questionnaire, with one of them being the questionnaire for older adults (WHOQOL-OLD)¹⁷.

In Mexico, the WHOQOL-OLD survey has already been validated, with psychometric properties of reliability and validity thus being obtained^{18,19}. This survey consists of 24 multiple-choice questions that evaluate six domains. The intimacy domain refers to the experiences of the older adult in relation to his/her sense of fellowship and feeling of reciprocal love with the closest people. The death and dying domain considers the feeling of fear and concern about the way and time of dying. The autonomy domain estimates the capability and freedom of older adults to make decisions and have control on their personal development and close surroundings. The sensory abilities domain assesses the impact of sensory functioning loss in older adults daily lives. The past, present, and future activities domain estimates satisfaction about achievements in life and expected outcomes in the future activities. The social participation domain refers to participation in activities of daily living, especially in the community

of the older adult. All domains are separately analyzed and a final score is generated. Basically, the higher the scores, the better quality of life; it should be noted that the sensory abilities, intimacy, and death and dying domains are reversely coded^{20,21}.

To the best of our knowledge, there is no research that has evaluated the quality of life in patients diagnosed with cataract undergoing phacoemulsification surgery plus intraocular lens implant in the Mexican population. The purpose of this study was to identify the changes in quality of life using the WHOQOL-OLD questionnaire, as well as in visual acuity, in patients diagnosed with senile cataract undergoing phacoemulsification plus intraocular lens implant.

Methods

A prospective, descriptive, and case-control study was conducted, including two groups of patients: (1) patients who underwent phacoemulsification plus intraocular lens implant and (2) patients with incipient senile cataract who did not undergo surgery.

Inclusion criteria were: patients aged ≥ 60 years in both groups, with best corrected visual acuity (BCVA) ≥ 0.6 LogMAR for the group of cases and < 0.6 LogMAR for the control group. The exclusion criteria were: other eye pathologies, systemic diseases, and other sensory disabilities that modify quality of life. To evaluate the quality of life, the WHOQOL-OLD survey was applied, in the group of cases on three occasions: before surgery, 1 month, and 3 months after the operation, after informed consent was signed. The same survey was administered to the control group on a single occasion.

The Excel (Microsoft Office, 2018) and GraphPad Prism V5.0 programs were used for statistical analysis. A one-way ANOVA test was used to compare the six domains of the survey at baseline and at 3 post-operative months in the group of cases, and a one-way ANOVA test was used for comparison of the six domains measured by the survey at 3rd post-operative month and the survey administered to the control group. In those in whom a significant difference was found, Mann-Whitney test was used to compare by domains. $p < 0.05$ was considered to be statistically significant.

Results

One-hundred eight people were recruited: 54 cases and 56 controls. Average age was 72 years for

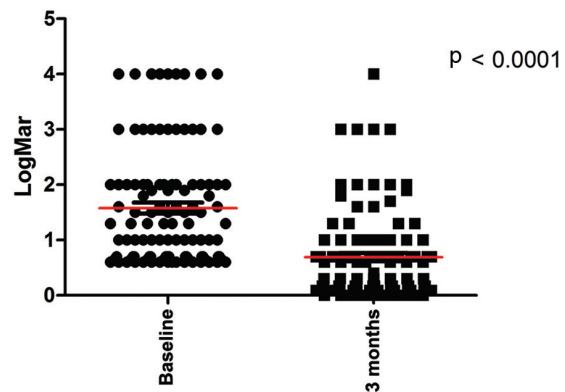


Figure 1. Comparison of best corrected visual acuity (BCVA) preoperatively and at 3 months of surgery.

Table 1. Results of the six domains of the survey preoperatively and at 2 months postoperatively

Domains	Cases		p
	Pre-operative survey	Survey at 2 months	
Social participation	12.07	12.44	NS
Intimacy	12.96	13.20	NS
Death and dying	10.48	11.76	0.0254
Sensory abilities	13.02	12.22	0.0033
Autonomy	10.67	11.89	0.0167
Past, present, and future activities	12.72	12.80	NS

NS: non-significant.

patients and 68 years for healthy subjects; 63% of surveyed subjects were females and 37% were males, in both groups. Pre-operative BCVA was 1.57 ± 1.041 LogMAR, and on 3rd month, it was 0.68 ± 0.7817 LogMAR ($p < 0.001$) (Fig. 1).

The comparative results of pre-operative and 1st month survey domains are shown in table 1. Table 2 shows the comparative results of the pre-operative and 3rd month survey domains. The comparative results of the domains of the surveys administered to the group of cases at 3rd month and to the control group are shown in table 3.

Discussion

Previously, cataract surgery outcome was only evaluated with visual acuity measurement, but over time, self-perception, and repercussions on patient daily life

Table 2. Results of the six domains of the survey preoperatively and at 3 months postoperatively

Domain	Cases		p
	Pre-operative survey	Survey at 3 months	
Social participation	12.07	13.76	< 0.0007
Intimacy	12.96	11.06	< 0.0001
Death and dying	10.48	6.38	< 0.00001
Sensory abilities	13.02	8.64	< 0.0001
Autonomy	10.67	10.15	NS
Past, present, and future activities	12.72	12.39	NS

NS: non-significant.

Table 3. Results of the six domains of the survey at 3 months postoperatively in the group of cases and of the survey administered to controls

Domain	Survey cases at 3 months	Survey controls	p
Social participation	13.76	13.84	NS
Intimacy	11.06	9.66	< 0.0001
Death and dying	6.38	5.89	NS
Sensory abilities	8.64	8.59	NS
Autonomy	10.15	12.47	< 0.0001
Past, present, and future activities	12.39	13.89	< 0.0001

NS: non-significant.

have gained ground²². Our study measured quality of life indicators in patients undergoing phacoemulsification plus intraocular lens implantation, and patients undergoing cataract surgery were found to have an improvement in quality of life and visual acuity, based on the favorable clinical response obtained on the WHOQOL-OLD survey and the Snellen chart. This result can be compared with the previous studies that, using different clinimetric tools, obtained an improvement in quality of life^{23,24}. Our follow-up was 3 months postoperatively, since it is sufficient time to assess a favorable response on both these indicators. There are previous investigations with a 3-month follow-up that show an improvement in visual function and quality of life, and there are also some other studies with a 7-month follow-up in which an impact on all aspects of life was achieved, including sleep quality²⁵.

The comparison between the results obtained on the survey conducted at 3 different times in the group of cases shows a clear improvement at 90 post-operative days. This can be explained by the lack of need to be cared for by third parties, by an increase in independence and by greater control of life of patients in the mediate post-operative period.

On the other hand, the improvement in visual acuity obtained by patients in the group of cases at 3 months is consistent with observations published by Bandhu et al.²⁶, who found an improvement of 99% in post-operative vision.

Despite the excellent visual results, we could not observe this same improvement reflected in 100% of the domains that were examined, as previously reported by Schein et al.²⁷, who justified this result by the ophthalmological comorbidity observed in the vast majority of their patients (glaucoma, uveitis, or age-related macular degeneration, to mention a few examples). In the present study, patients with other ophthalmological or systemic pathologies that affect vision or quality of life were excluded from the study. The absence of total improvement in the domains can be explained because some of them, such as social participation, autonomy or past, present, and future activities, which are not only related to the ophthalmologic condition, can be affected by factors such as age, patient high expectations, failure of the family support network, or socioeconomic situations that are impossible to improve²⁸.

Limitations of our study include the sample size; however, despite being small, it was possible to carry out a statistical analysis that allowed reliable results to be obtained, comparable to those of other published studies. Other possible limitations include the use of questionnaires for visual function measurement and evaluation with the quality of life questionnaire for a comprehensive assessment of the impact of cataract surgery. It would be interesting for a study to be conducted, stratifying patients by other factors that affect the quality of life to avoid a possible membership bias.

Despite the above-mentioned limitations, the indicators measured in this study (quality of life and BCVA) showed improvements since the 3rd post-operative month. These results are not only relevant to the patient, but also to the entire medical team involved in each cataract surgery, as they allow improving their performance in the presence of senile cataract when used as part of usual pre-operative evaluation. Lee and Kymes²⁹ concluded that cataract surgery should be considered one of the most cost-effective surgical treatments.

It should be noted that the obtained results have been compared with studies published in developed countries and demonstrate the usefulness of phacoemulsification plus intraocular lens implant as a treatment of choice for cataracts, which offers a prompt recovery that generates a positive impact on patient quality of life.

Conclusion

Quality of life is such a broad concept that it cannot be adjusted to the explanation of a single aspect or point of view. Patients with senile cataract undergoing phacoemulsification plus intraocular lens implantation show an improvement in BCVA that is reflected on quality of life; this can be interpreted as positive results and should be taken into account to support surgical indication. The use of clinimetric tools should be included in ophthalmologists daily practice for comprehensive patient care.

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Conflict of interests

All authors declare that they have no conflict of interests.

Ethical disclosures

Protection of human and animal subjects. The authors declare that no experiments have been performed on humans or animals for this research.

Confidentiality of data. The authors declare that they have followed the protocols of their work center on the publication of patient data.

Right to privacy and informed consent. The authors have obtained informed consent from the patients and/or subjects referred to in the article. This document is in the possession of the corresponding author.

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