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Pre-and Post-Operative Quality of Life for Patients Undergoing Cataract Surgery: Prospective study in the Occupied Palestinian Territories.

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Thesis Approval

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Declaration

I certify that, unless otherwise noted, the thesis I submitted for my master's degree in intensive care nursing at the Arab American University is the product of my own research, and that this work (or any portion of it) has not previously been submitted to another university for a higher degree.

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Date: 23/4/ 2025

Dedication

I dedicate this work to my mother, who never stopped believing in me.

To my beautiful family, which is the source of love.

To my dear friends from the medical field in hospitals who are on the job, who are doing the impossible to save a person's life, and to all those who helped me to accomplish this work.

For those who are always in my heart and who give me strength to continue my path of success.

To all the martyrs and injuries in Palestine, and to all the stationed cities of Palestine, from the city of Jenin Al-Qassam to the city of Gaza Hashem.

And finally, to everyone who helped me finish this work.

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Finally, I owe a huge debt of gratitude to my family and friends for helping meget through college and making those years the happiest of my life.

Abstract

Background: The term of vision-related quality of life (VRQoL) is a critical outcome that is found in the literature among patients who undergo cataract surgery, and is assessed by several tools and found to be affected by several factors. The current study aims to investigate and compare between preoperative and postoperative VRQoL among Palestinian cataract patients and the most common factors related to the improvement.

Methodology: The study implemented pretest-posttest quantitative design, and included 58 patients who underwent cataract surgery in four hospitals in Palestine. The valid tool of NEI-VFQ-25 was used to evaluate VRQoL, and were analyzed using SPSS, with commitment to ethical considerations of anonymity and confidentiality.

Result: The patients had a mean age of 60.4 years old, mostly related to HTN and DM (15.5% each). The mean scores of NEI-VFQ-25 subscales have improved from 62.371 to 74.375 in general health, 64.363 to 91.814 in difficulty with activities, 62.787 to 79.358 in response to vision problems and 66.121 to 86.014 in overall scores (p-value < 0.001 in all of them). The improvement was significantly higher in cataract patients with intraocular pressure and HTN patients than other causes (p-value = 0.036).

Conclusion: Cataract surgery is a crucial intervention that significantly enhances the VRQoL in patients. The study highlights the importance of surgical treatment for cataracts and encourages more accessible and efficient cataract surgical services in the region, and future research should focus on long-term VRQoL outcomes and the development of specific pre- and post-operative care programs.

Key words: cataract, quality of life, vision-related quality of life, cataract surgery, visual function questionnaire.

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List of Abbreviations

lvCCT: low vison Cambridge Color Test

VRQoL: vision-related quality of life

NEI-VFQ: National Eye Institute Visual Function Questionnaire

QoL: quality of life

PE: phacoemulsification

PC-IOL: posterior chamber intraocular lens

IOL: intraocular lens

UK: United Kingdom

GBI: Glasgow Benefit Inventory

CD: Secure Digital

CI: confidential informant

VAS: Visual Analog Scale

VF-14: Visual Function Index

AMD: Acute Macular Degeneration

CLVQOL: Chinese-version low vision quality of life questionnaire

BCVA: Best Corrected Visual Acuity

SPSS: Statistical Package for Social Sciences

ANOVA: Analysis of variance

ADLs: Activities of Daily Living

Chapter One: Introduction

1.1 Background of the Study

Globally, 94 million individuals suffer from blindness or visual impairment, with cataracts accounting for the majority of these cases, but the majority of blindness cases are preventable, reduced life expectancy and a lower quality of life are linked to cataracts (Cicinelli et al., 2023). In more cases globally, cataracts are the primary cause of blindness and visual impairment. In 2020, approximately 39.55% of worldwide cases of blindness were caused by cataracts. (Eye, 2024).

The severe eye condition known as age-related cataract provides a threat to worldwide public health(Taylor et al., 2005). Nearly everyone will have some kind of cataract by the age of 70(Zhu et al., 2015), Furthermore, 87% of visually impaired individuals worldwide reside in poor nations(Bourne et al., 2017), Thankfully, the most popular ophthalmic procedure in many industrialized and developing nations is cataract surgery, which is also a very successful treatment(Lam et al., 2015).

The majority of cataract cases develop after birth, with oxidative stress and aging being the main contributing factors. However, a number of modifiable and non-modifiable risk factors might hasten the development of cataracts(Lesiewska et al., 2023). The most popular and economical course of treatment for the majority of patients is phacoemulsification combined with intraocular lens implantation, Comprehensive cataract surgery treatments, which include diagnosis, treatment recommendations, and rehabilitation, are being used more frequently(Wang & Tang, 2022). Global disparities in

the quality of surgical services remain a barrier, nevertheless, Preoperative risk assessment, risk mitigation techniques, and advancements in surgical technologies have made (Cicinelli et al., 2023, p. 3)

Protan and Tritan axis color vision is statistically significantly affected by cataract surgery, The high frequency of patients with mixed cataract made it impossible to determine the impact of distinct subtypes and varying severities(Jasleen K Jolly et al., 2022). In clinical gene therapy trials involving vitreoretinal surgery, the lvCCT color sensitivity assessments are frequently utilized as outcome endpoints, and vitrectomy speeds up the formation of cataracts. In order to account for this effect when using color vision tests as an outcome measure in clinical trials, it is crucial to quantify the effect of cataract, Using color vision measures, we were unable to determine an accurate correction factor for cataract(Jasleen K Jolly et al., 2022).

Untreated cataract patients have worse general health and social standing, a lower vision-related quality of life (VRQoL), and a higher mortality rate(Asaoka et al., 2011). Despite being thought of as cost-effective, cataract surgeries do not always have the best results, particularly in developing nations where some studies have suggested using less expensive surgical techniques, such as manual small-incision cataract surgery, which is more likely to result in postoperative astigmatism than phacoemulsification, which is not always available in hospitals in low-income countries(Yibekal et al., 2020). After cataract surgery, improving visual acuity is typically the primary goal; however, visual function outcomes namely, engagement in daily activities, work productivity, and household

economics are often overlooked. These outcomes will support the case for more funding for cataract surgery (J. K. Jolly et al., 2022)

The last three decades witnessed an increase in the amount and types of standardized assessment tools and questionnaires that intend to assess and evaluate patients' VRQoL before and after cataract surgeries, as clinical testing alone is not adequate to measure the impact cataract surgeries have on quality of life, The National Eye Institute Visual Function Questionnaire (NEI-VFQ) was created to provide a self-reported visual function measurement. A 51-item questionnaire was created from focus groups of people with main causes of eye illness in the United States, and was later reduced to 25 items, based on replies from persons with eye disease and visual impairment, as well as a small group of people who did not have eye disease, The abbreviated questionnaire has already been verified and used to indicate that people with ocular disease and visual impairment had lower scores than people who do not have ocular disease or visual impairment (Brody et al., 2001; Jampel et al., 2002; Klein et al., 2001).

Numerous studies looked into the most frequent causes and outcomes of cataract patients' worse quality of life QoL is often negatively impacted in cataract patients at all severity levels and is linked to the risk of irreversible vision impairment in the event that other conditions, such as glaucoma, coexist. As seen by the patients' notable increases in their NEI-VFQ scores and the corresponding improvement in their visual acuity, cataract surgeries were generally linked to a better VRQoL.

1.2 Problem Statement

Understanding VRQoL for cataract patients and its factors is very important for the

purpose of symptom relief improvement, care and rehabilitation, as well as the use of current data for future patients to help them understand and overcome the issues related to cataract surgery. VRQoL is a predictor of procedures' success and prognostic importance (K. G. To et al., 2014). Despite the abundance of articles that aim to evaluate the reliability of different assessment tools, this type of research is scarce in the Middle East, and little is known about the influence cataract surgery has on VRQOL in Palestine in particular. This is probably due to the low levels of awareness regarding the importance of assessing patients QoL after cataract surgeries, in addition to the focus of clinicians on physiological rather than on psychosocial improvement. The purpose of this study is to evaluate the preoperative and postoperative quality of life of patients undergoing cataract surgery in the West Bank region of the Occupied Palestinian Territories.

1.3 Significance of the Study

Understanding QoL for cataract patients and its factors is very important for symptom relief improvement, care and rehabilitation, as well as the use of current data for future patients to help them understand and overcome the issues related to cataract surgery(Kien Gia To, Lynn B Meuleners, et al., 2014).

Additionally, it is crucial for medical staff in decision-making QoL serves as a predictor of procedure success and has prognostic significance. (Haraldstad et al., 2019). Despite the abundance of articles that aim to evaluate the reliability of different assessment tools, this type of research is scarce in the Middle East and Palestine in particular. This is probably due to the low levels of awareness regarding the importance of assessing patients QoL after cataract surgeries, in addition to the focus of clinicians on physiological rather than on psychosocial improvement.

1.4 Research Aim

The study aims to assess the Quality of Life (QoL) among Palestinians undergoing phacoemulsification (***PE***) and posterior chamber intraocular lens (PC-***IOL***) implantation before and after surgery.

1.5 Research Objectives

The study aimed to:

1- Clarify the general QoL level among Palestinian cataract patients prior to their surgeries.

2- Identify the most common sociodemographic and cataract-related factors affecting QoL among Palestinian cataract patients before surgery.

3- Investigate the general QoL level among Palestinian cataract patients in the postoperative stage of cataract surgery.

4- Identify the most common factors of sociodemographic and cataract-related that affect QoL among Palestinian cataract patients in the postoperative stage.

5- Evaluate the relationship between common sociodemographic factors and cataract-related quality of life among Palestinian cataract patients.

6- Clarify the differences in VRQoL between the preoperative and postoperative phases of cataract surgery among the Palestinian community.

1.6 Research Question

1. What is the general QoL level among Palestinian cataract patients prior to their surgeries?

2. What are the most common of sociodemographic and cataract-related factors that affect QoL among Palestinian cataract patients prior to surgery?

3. What is the general QoL level among Palestinian cataract patients in the postoperative stage of cataract surgery?

4. What are the most common factors of sociodemographic and cataract-related that affect QoL among Palestinian cataract patients in the postoperative stage?

5. What is the relationship between the most common factors of sociodemographic and cataract-related and enhanced/decreased QoL among Palestinian cataract patients?

6. Are there differences in VRQoL between the preoperative and postoperative phases of cataract surgery among the Palestinian community?

1.7 Conceptual Definition

Cataract: It generally refers to the "opacification or discoloration of the lens substance", and can be localized or interfused in multiple lens parts, and causes significant light transmission disturbance (Grzybowski et al., 2020) .

Vision-related quality of life (VRQoL): Although no clear definition is found in the literature, a comprehensive definition of VRQoL can refer to the degree to which a person's visual ability affects their overall quality of life, and contains the impact of visual impairment on daily activities, emotional well-being, social interactions, and independence(Yibekal et al., 2020).

1.8 Operational Definition

Vision-related quality of life (VRQoL): It is typically measured using a tool that contains Likert scale items and generates a score out of 100, the tool that was used in the

current study was the National Eye Institute Visual Function Questionnaire (NEI-VFQ-25)(Yibekal et al., 2020).

Chapter Two: Literature Review

2.1 Introduction

The purpose of this literature review is to evaluate the literature on the impact of cataracts on patient quality of life, specifically vision-related quality of life (VRQoL). Key keywords used to search literature studies included: cataract, quality of life, vision-related quality of life, cataract surgery, visual function questionnaire. Articles were selected based on several criteria, including year of publication (last 10 years) and location (Middle East and surrounding countries preferred). The total number of documents found using the above keywords exceeds 500, of which 27 are summarized for the introduction and literature review of this article. There are a limited number of articles on this topic in Palestine and the Middle East. In summary, according to this literature review, cataracts have a significant negative impact on patients' quality of life, with age being the factor most commonly associated with poorest VRQoL. Additionally, cataract surgery helps improve VRQoL and reduce complications and mortality. Finally, the assessment tool used by the NEI-VFQ 25 is strongly supported by other articles as it is validated and provides a holistic view of patient VRQoL aspects.

Adaptation to the environment depends largely on vision Most information is gathered through vision, and limit visual impairment Do many activities such as reading newspapers, watching TV, Environmental positioning, bus number or face recognition expression. This restriction on daily activities means on the one hand Failure to meet important personal needs, at least partially. On the other hand, subjective quality of life is also based on the possible satisfaction of these needs and opportunities to achieve

important goals and participate in a variety of activity format (Bowling & Gabriel, 2004; Schalock, 2000).

2.2 Literature Review

Yibekal BT, et al reported that almost half of the patients with visual impairment had poor vision-related quality of life. Severe visual impairment/blindness, long duration of visual impairment, older age, and rural residency had a statistically significant association with poor vision-related quality of life(Yibekal et al., 2020), although Teles, L. P. M., et al reported that the final group consisted of 41 patients, with a mean age of 72 years (SD: 9.01), of which 14 were male and 27 female. In addition, out of 41 patients, 37 underwent facectomy in both eyes, 03 only in the right eye and 01 only in the left eye. Given the collection and thorough analysis of the data, the improvement in the quality of life of patients submitted to cataract surgery with intraocular lens implantation was noticed. There was a statistically significant increase ($p<0.001$) in binocular visual acuity, monocular visual acuity, and scores in 11 of the 12 subdomains of the NEI-VFQ-25. No statistical significance was observed in the subdomain “Eye Pain” ($p=0.934$), as result There was a significant improvement in the quality of life of patients who underwent cataract surgery with intraocular lens implantation(Teles et al., 2020b).

To et al, reported that Cataract surgery significantly improved VRQOL among bilateral cataract patients in Vietnam. Contrast sensitivity as well as stereopsis, rather than visual acuity significantly affected VRQOL after cataract surgery. Due to the benefits that cataract surgery has for VRQOL, ensuring that the older population has access to regular eye examinations and timely treatment for cataract is paramount, Cataract surgery significantly improved VRQOL among bilateral cataract patients in Vietnam. Contrast

sensitivity as well as stereopsis, rather than visual acuity significantly affected VRQOL after cataract surgery (K. G. To et al., 2014). Despite The principal barriers to low-cost cataract surgery uptake in rural China included lack of family support and failure to understand the need for surgery. Education targeting entire families to eliminate these barriers and development of community support systems at the family level are required to achieve greater uptake of low-cost cataract surgery programs in rural China(Zhang et al., 2014).

The study has concluded that cataract surgery in Jordan not only improve quality of life in terms of visual acuity, but also bring improvements in psychological and mental wellness of a person(Al-Zubi et al., 2018).although, : Cataract surgery significantly improved VRQOL among bilateral cataract patients in Vietnam. Contrast sensitivity as well as stereopsis, rather than visual acuity significantly affected VRQOL after cataract surgery (K. G. To et al., 2014).

Perception of 120 patients regarding the primary visual disability related to cataract and preference of visual outcome after surgery were as sassed by a questionnaire to assess the primary visual disability in patients with cataract and to evaluate their preference regarding the visual outcome after surgery. As patients have widely differing visual demands, it is vital to take these into account when considering surgery in order that surgery induced improvements in visual acuity be translated by considerable gains in real life activities, emotional and social life components(Kanonidou et al., 2013). Although, we identified 144 cases with posterior capsule rupture and/or loss of capsular bag support (incidence 0.99% of all surgeries). The mean age of patients was 76.9±9.1 years and gender distribution ratio 29:71 male:female. Pseudoexfoliation syndrome (PXF; incidence 21%)

and small pupil (incidence 14%) were over-represented in complication eyes, especially at the beginning of the study. Capsular bag-related complication rates were reported in 0.36% of surgeries for senior and 7.03% for resident surgeons at the beginning of the study, compared to 0.32% and 1.32%, respectively, at the end of the study. Best-corrected visual acuity at the final post-operative visit was 0.61±0.16 decimals at the beginning of the study, and 0.81±0.19 decimals at the end of the study. The mean number of post-operative visits was 4.3±2.7 and did not show trend over the study period(Alexander Aaronson et al., 2020).

During the perioperative period of cataract surgery, high-quality nursing techniques (preoperative video and audio education, limb massage or back massage, listening to soothing music) can reduce pain and anxiety. Anti-anxiety agents and preoperative sedatives can alleviate anxiety and improve comfort, but they are suitable for patients with high anxiety. What kind of surface anesthetic drugs are used in operation has no obvious help to improve comfort(Zeng et al., 2021).

In this cross-sectional study, the 51-item NEI-VFQ seems to be reliable and valid and should be a useful tool for group-level comparisons of vision-targeted, health-related quality of life in clinical research. Additionally, the psychometric properties of the NEI-VFQ were not influenced by the type or severity of the underlying eye disease, suggesting that the measure will provide reproducible and valid data when used across multiple eye conditions(Mangione et al., 1998).

Cataract causing visual loss is associated with reduced HRQoL and economic poverty among older adults in low-income countries. Cataract surgery improves the

HRQoL of the individual and economy of the household. The findings of this study suggest these benefits are sustained in the long term(Danquah et al., 2014).

The purpose of this literature review is to assess the literature on the effect of cataract on patients' QoL, and more specifically their vision-related quality of life (VRQoL). The main keywords that were used to find literature studies include: cataract, quality of life, vision-related quality of life, cataract surgery, visual function questionnaire. A literature review was conducted using electronic databases like PubMed and Google Scholar to find pertinent publications and journals.

Conceptual framework:

This study's conceptual framework is based on previous research highlighted in the literature review, which identifies factors that may impact the Vision-Related Quality of Life (VRQoL) of patients before and after cataract surgery. Several studies have noted various factors that can affect the quality of life for individuals undergoing cataract surgery.

Visual impairment-related factors, including severe visual impairment and blindness, as well as the duration of visual impairment, the causes of cataracts also the previous medical history of the patients, and the medications administration of patients could play a significant role (Yibekal BT et al., 2020). Surgery-related factors are also important; for example, cataract surgery has been shown to significantly improve VRQoL among patients with bilateral cataracts. Key factors in this improvement include contrast sensitivity and stereopsis. Additionally, patients who receive intraocular lens implants experience significant increases in both binocular and monocular visual acuity, along

with most subdomain scores on the NEI-VFQ-25 (To et al., 2014; Teles et al., 2020; Al-Zubi et al., 2018). On the other hand, complications of the surgery could impact the VRQoL, like posterior capsule rupture and loss of capsular bag support are notable complications, (Aaronson et al., 2020). Perioperative Nursing Techniques and Interventions are suggested as factors associated with VRQoL. (Zeng et al., 2021).

Moreover, demographic factors such as age, gender, residency area, economic status, awareness level, and psychological support are significantly associated with VRQoL, as identified in the literature review (Yibekal BT et al., 2020). Therefore, in the current study, the conceptual framework of factors associated with the VRQoL of patient pre and post-cataract surgery was concluded as sociodemographic and socioeconomic factors such as age, gender, education level, and economic status, cataract-related factors such as affected eyes and cause of cataract and patients medical history and mediations, finally, cataract surgical-related factors.

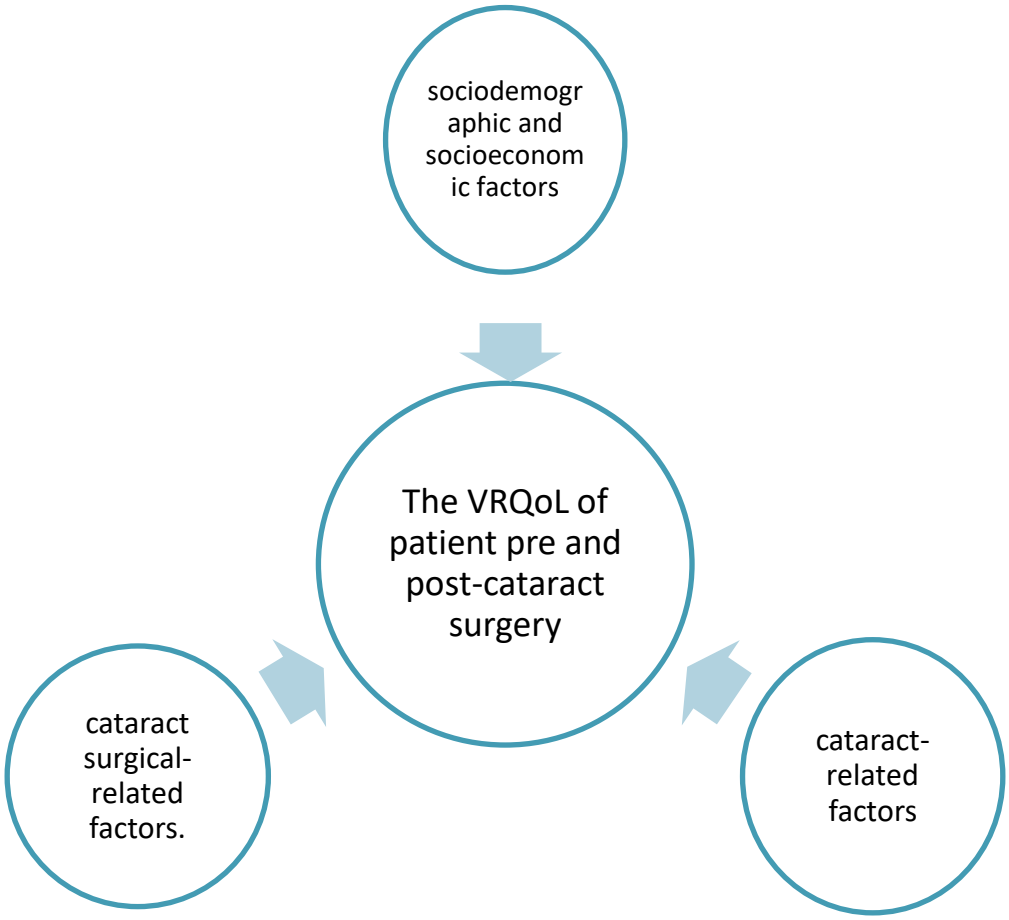

Figure 1: Conceptual framework

2.3 Research Topic Definition

2.3.1 Cataract and Cataract surgery

Controlled by oculomotor muscles, the lens of the eye functions as a flexible organ to focus the light on the retina. Simply defined(Joyce et al., 2023), stated that cataract is "an opacity of the eye's lens". The lens is the 5-mm thick and 9-mm in diameter biconvex structure that is positioned directly behind the iris at the front of the eye, and has three main anatomical layers: the capsule, cortex and nucleus. The authors also stated that the structure of the lens contains 65% of water, and the rest of structure contains protein, glucose,

mineral salts (mainly potassium, which is concentrated more than in any other tissue) and vitamins, while it doesn't contain pain fibers, blood vessels or nerves, and is suspended by suspensory fibers in the eye(S. Watkinson & R. Seewoodhary, 2015).

Aging process and formation of oxidative radicals are thought to be the main pathophysiology behind the formation of cataract, because this process hinders the normal physiology of how the healthy eye maintains water and electrolyte inside the lens in balance, which is achieved through a selective semipermeable capsular membrane and the action of sodium-potassium pump (S. Watkinson & R. Seewoodhary, 2015).

S. Watkinson and R. Seewoodhary (2015) concluded that the human becomes more and more cataractous with advanced age, and while the exact etiology is not known, it is considered to be multifactorial. The previous article concluded that the slow progression of cataract is accompanied with several symptoms, including glare, difficulties seeing night (like with night driving), the appearance of multiple images in the same eye, complaining of spots in the vision, halos around bright light, and washed out or faded color vision.

In their book, Riordan-Eva and Augsburger (2018) concluded the most common factors for cataract, and classified them into 8 classifications. Cataract can be congenital, like in rubella or caused by genetic tendency in general, or can be caused by blunt or chemical trauma, while metabolic disorders, mainly diabetes mellitus, are a more common cause. Toxicity caused by medications' side effects, like steroids, is also a risk factor. Moreover, cataract can be secondary to ocular inflammation, like uveitis and sclerotic, and can be a complication of some procedures, like intraocular surgery, e.g. vitrectomy and

retinal detachment surgery. Age-related cataract is the most common cataract cause, while nutritional risk factors are like vitamin A deficiency and food malabsorption.

Cataract surgery has a low complication rate. However, many studies have reported overuse of cataract surgery. Cataract surgery thresholds are becoming increasingly relaxed in high volume cataract surgery in patients with good vision who undergo cataract surgery. In patients with good vision, the necessity of surgery and its possible benefits are questionable. Small changes in threshold criteria may have a significant impact on the number of patients requiring surgery. Therefore, the necessity or selection process for cataract surgery has been questioned (A. Aaronson et al., 2020).

2.3.2 Quality of Life (QoL)

The term QoL is a complex multi-dimensional concept with many definitions, therefore various instruments attempt to measure this concept that are not developed based on a single definition or conceptual model. This leads to a lack of a clarity in the meaning of QoL, resulting in a threat to the validity of research using QoL. In the systematic review of Jain et al. (2019) about the QoL following cataract surgeries, the researchers mentioned a crucial point explaining the great variety in QoL assessment tools and criteria that has been studied. On one hand, factors related to the type of cataract surgery, type of IOL (rigid, foldable, monofocal or multifocal), and type of cataract (unilateral or bilateral) can affect results related to QoL. On the other hand, the type of instrument used to assess QoL can also affect the results, especially since there are many instruments that are used to measure QoL among cataract patients including generic, health-related, vision-related, visual function of surgery-related complications tools.

2.3.3 Health-related Quality of Life

HRQoL pertains to the multifaceted notions that delve into the areas linked to an individual's mental, physical, social, and emotional well-being(Kwon et al., 2015). By concentrating on improving the health status of individuals in society, the measures go beyond the direct criteria that investigate life expectancy, population health, and causes of health. In addition to providing insightful new information on the eight correlations between risk variables and HRQoL, HRQoL measurement aims to quantify the burden of avoidable illnesses, accidents, and impairments(Havstam Johansson et al., 2020).

Measuring HRQoL essentially offers a way to track a country's progress toward achieving its health goals. Since the method examines life hardship, socioeconomic position, culture, social support, and demographic characteristics, it is essential for improving people's quality of life. The section essentially examines the effects of age, gender, nationality, life views, spirituality, and culture on the availability and quality of healthcare. Because both HRQoL and QoL aim to improve an individual's quality of care and well-being, they are connected(Havstam Johansson et al., 2020).

2.3.4 Cataract and vision-related quality of life (VRQOL)

Since research indicates that an older person's quality of life is correlated with freedom, activity, independence, and control, quality of life is an important result of cataract surgery(S. Watkinson & M. Seewoodhary, 2015). While overall quality of life and VRQOL are comparable concepts, VRQOL includes questions about particular issues like activities of daily living for those with visual impairments. Studies conducted thus far suggest that both physical and psycho-social quality of life scores are significantly improved following first-eye cataract surgery. (Gasparini & Behlau, 2009; Havstam

Johansson et al., 2020). Elliott et al.'s study even claimed that gains in VRQOL after first-eye surgery were greater than those after second-eye surgery(Elliott et al., 2000).

2.3.5 Visual changes following cataract surgery

It has been demonstrated that first-eye cataract surgery significantly improves visual acuity, or sharpness of vision, contrast sensitivity, or the capacity to distinguish between objects and backgrounds, and stereopsis, or depth perception(Supuk, 2015). However, while awaiting second-eye surgery, patients with bilateral cataracts frequently suffer vision-related issues, most likely as a result of variations in vision between the operated and un-operated eyes(To, 2014). Stereopsis suffers when there is a significant disparity, This problem is mainly resolved by second-eye surgery, which can also significantly improve stereopsis(O'Connor et al., 2010).

2.4 Visual function questionnaire

2.4.1 Glasgow Benefit Inventory (GBI)

In otolaryngology, the Glasgow Benefit Inventory (GBI) is a commonly used, validated, generic patient-recorded outcome measure that reports change in quality of life after intervention(Hendry et al., 2016). The improvement in health status brought about by medical intervention is known as patient benefit. The GBI was created with the patient in mind, to respond as sensitively as possible to ORL interventions, and to offer a standard measure by which to assess the relative benefits of various interventions(Aliyeva et al., 2024).

2.4.2 Visual Analog Scale (VAS) and Visual Function Index (VF-14)

Cataract surgery has seen a remarkable growth of 400% over the past decade, making it the most popular surgical procedure in developed countries. In the United States alone, over 1.6 million surgeries have been performed, a staggering number that can be attributed to the aging population and advancements in technology. In fact, the use of visual acuity as a determining factor for the necessity of surgery has become obsolete, with patient worries, lifestyle, and self-assessed functionality now being the primary drivers for referral. Additionally, cataract surgery is mainly conducted through private healthcare systems, making patient contentment a crucial aspect (Ka et al., 2017).

2.4.3 The National Eye Institute Visual Functioning Questionnaire – 25 (NEI-VFQ-25)

The NEI-VFQ-25 tool addresses a wide range of visual difficulties and assess how they affect social and mental status (Mangione et al., 2001; K. G. To et al., 2014) (Mangione CM, and others, 2001). Studies have reported that this questionnaire has a strong association with objective assessment of visual impairment and it has been widely used in many countries (Broman et al., 2001; Globe et al., 2003; Labiris et al., 2008).

The NEI-VFQ-25 (Annex 1), which may be self-administered and has been validated by multiple studies with a high level of accuracy for several languages (Alvarez-Peregrina et al., 2018; Jelin et al., 2019; Ksiaa et al., 2021; Mollazadegan et al., 2014), and is one of the most commonly used tools in the field of visual impairment. The NEI-VFQ-25 is a 25-question survey that assesses patients' visual function as well as the impact of various eye disorders on their quality of life. Its 25 questions are divided into

12 subdomains, each of which has one or more questions: social aspects, activities of daily living, distance-vision activities, near-vision activities, ability to drive cars, dependency, eye pain, general health, mental health, vision, color vision, and peripheral vision are the three types of vision. Each question includes five alternative responses, and based on the answer, the score ranges from 0 to 100, where 100 represents the best possible score on the measure and 0 represents the worst (Toprak et al., 2005).

In Aracaju City, Brazil, Teles et al. (2020a) conducted a prospective observational study on 41 cataract patients using NEI-VFQ-25 and observed a substantial increase in the quality of life of patients who underwent cataract surgery with intraocular lens implantation. 37 of the 41 patients had both eyes PE, three had PE only the right eye, and one had PE only the left eye. The mean age of participants was 72 years, which is reasonable since cataract tends to affect populations older than 65 years, according to literature (Mendonça et al., 2018). More women (65.8%) were included in the investigated sample in this study than men (34.2%), and this is expected as women tend to use health services more than men. The NEI-VFQ-25 that was used to assess the patients' QoL showed that there was an overall improvement in the QoL of patients undergoing PE. Results of this study indicated that there was a statistically significant ($p < 0.001$) improvement in the QoL in 11 of the 12 NEI-VFQ-25 subdomains of the questionnaire, with Distance-Vision Activities, Near-Vision Activities, Ability to Drive Cars, General Health and Vision being the most significant subdomains. Eye pain was the only subdomain that did not show a statistically significance difference ($p = 0.934$). This study indeed has some limitations specifically the fact that the subject and method of subject selection, as well as the sample size calculation were not specified. Study authors

have clearly indicated that their study results may not be representative due to small sample size.

Amedo and colleagues (Amedo et al., 2017) conducted a prospective cross-sectional study in Ghana on 70 participants selected using convenient sampling utilizing a researcher-administered NEI VFQ-25 before surgery and two months after surgery. The mean age of participants in this study was 65 years and ranged from 12-99 years of age. The majority of participants in this study were females (52.3%), as females are known to suffer from more visual impairment in developing countries due to financial constraints, culture and tradition. The study revealed marked improvement in QoL after surgery, as there was statistically significant ($p < 0.05$) improvement in scores for all subscales. This is similar to other studies that examined changes in NEI VFQ-25 scores after cataract surgery (Ishii et al., 2008; K. G. To et al., 2014; Zhang et al., 2011), which emphasized on the importance of cataract surgery on improving daily activities. Limitations in daily living activities lead to decrease social interactions, increase in dependency, and greater psychosocial symptoms. This is problematic for patients who are unable to undergo cataract surgeries. Increased cataract surgery rates in developing countries and low-income settings are projected to contribute significantly to poverty reduction and improved quality of life for these populations due to their high success rates and cost-effectiveness. Limitations in this study includes lack of control group from general population that is necessary to eliminate environmental confounders. It should also be noted that the questionnaire relied on responses among elderly participants, and this study did not take into account their cognitive abilities when answering questions.

Kienand and colleagues (K. G. To et al., 2014) conducted a prospective cohort

study on 413 cataract patients in Ho Chi Minh City, Vietnam, to determine the impact of cataract surgery on vision-related quality of life (VRQOL) and to investigate the relationship between objective visual measures and change in VRQOL after surgery among bilateral cataract patients. Participants had age-related bilateral cataracts, were scheduled to have first-eye or first-and-second-eye cataract surgery, lived independently in the community, and were 50 years or older. At least a week before first eye cataract surgery, and one to three months following either first eye surgery or both first and second eye surgery, data was collected. A researcher-administered questionnaire and three objective visual tests were used to gather data. Phacoemulsification was used for all cataract procedures. The NEI VFQ-25 was used to look at how vision impairment affects vision-related quality of life. The majority of participants who had only one eye surgery and both eye surgeries were female (56 percent and 67.9%, respectively); they were between the ages of 60 and 69 (44.9% and 38.6%, respectively); they were married (64.5 percent and 57.9%); they had a co-morbidity (60.8 percent and 61.4 percent, respectively; and they did not take any medications (57 percent and 60 percent). They discovered that after surgery, participants who had only first eye surgery, as well as those who had both first and second eye surgery, showed statistically significant improvements in mean scores for all VRQOL subscales. When comparing those who had both eyes operated with those who only had the first eye done, all subscale scores were higher following surgery for those who had both eyes operated on. After correcting for potential confounders, cataract surgery resulted in a substantial improvement of nearly 15 points in the VRQOL composite score ($p< 0.001$). Visual acuity was not substantially related with improvement in VRQOL following surgery, but binocular contrast sensitivity and

stereopsis were. The VRQOL score improved by approximately 13 points for every one log unit improvement in contrast sensitivity (better eyesight) ($p< 0.001$). Finally, for every log second increase in stereopsis (poorer vision), VRQOL score decreased by over three points ($p < 0.001$).

A Norwegian study was conducted to examine age-related cataract and its effect on QoL in patients who were older than 60 years using the NEI VFQ-25 instrument, at Department of Ophthalmology in Oslo University Hospital. The study was conducted on a sample of 145 patients with a mean age of 81.7 years old, with no cognitive or mental disorders. The main results found that the mean score of patients younger than 82 years of age was 79.4, and the mean score for patients 82 years and older was 77.7, which is considered to be a high score for both age groups, but it can be concluded that younger age is related to better VRQoL. Results also showed that there was no significant difference between scores according to age group, gender, residency and retirement status, which means that age-related cataract is the most common type of cataract that has an equal effect on patients' QoL regardless of most of other factors (General health, General vision, and Driving). Results also included detailed scores of the tool's subscales, in which the highest mean score for the total sample was in color vision (93.65), followed by peripheral vision (92.93), dependency (89.73), ocular pain (86.14) and social functioning (83.33), while the least mean scores were in subscales of general health (47.82), followed by general vision (56.95), driving (64.67) and role difficulties (68.29). They found that population with newly diagnosed nAMD, VRQoL is reported at a high baseline level. The highest scores were for the subscales "Ocular pain," "Color vision," "Peripheral vision," and "Distance activities," which are subscales typically

insensitive to AMD; and low scores for the subscales “General vision,” “Near activities,” and “Driving,” which are the most sensitive subscales to AMD. they concluded that no significant differences when comparing gender, age groups, and civil status. Overall, “General health,” “General vision,” and “Driving” are the most affected aspects in this study. “Ocular pain,” “Peripheral vision,” “Dependency,” and “Color vision” are least affected, followed by “Mental health,” “Distance activity,” “Near activity,” and “Role difficulty.” We can interpret no correlation between age, gender, and civil status and VRQoL because they are nonmodifiable factors, on patients with wet AMD gives us an indication that other modifiable aspects may affect it (Schippert et al., 2018).

2.4.4 Chinese-version low vision quality of life questionnaire (CLVQOL)

A Chinese prospective study was conducted to investigate the visual outcome and QoL of cataract patients with vision-threatening diabetic retinopathy after undergoing cataract surgery. The sample included 126 cataract patients who were between 45 and 82 years old (mean = 65.6 years old), who have had 13.7 years of mean duration of diabetes diagnosis (26.2%), and 7.26 years of mean time since diabetic retinopathy diagnosis. All patients had phacoemulsification surgery type and were evaluated for outcomes 3 months after the surgery. Results showed that all groups had a significant improvement on post-surgery QOL compared to pre surgery levels in visual acuity, and QoL (considering they used the Chinese version), with its subdomains, including general vision and lighting level, mobility level, psychological adjustment level and reading, fine work and ADLs. Moreover, results showed that both visual acuity and the vision related quality of life of the patients with diabetic retinopathy improved significantly after cataract surgery with

correlation coefficient 0.6. Cataract surgery is an effective intervention for patients with stabilized diabetic retinopathy (Zhu et al., 2017). The use of linear regression test to investigate the relationship between years of cataract diagnosis and VRQoL outcomes could be enhanced by the use of diagnosis years as continuous variable rather than categorical, which may indicate the exact trend in the correlation between years of diagnosis and outcomes. On the other hand, the use of diagnosis years as categories is useful in the detection of the exact diagnosis year range that is most significant with VRQoL outcomes, which, in case of this study, was between 16 and 20 years.

Similar results were found using the Chinese version of QoL instrument in a study conducted on a sample of 93 patients who were diagnosed with advanced glaucoma, in which there is a 10-degree loss of fixation, and underwent phacoemulsification. Participants have mean age of 69.1 years old, with a mean duration of glaucoma diagnosis of 11.04 years. Results showed significant improvement in all of aspects regarding visual acuity and QoL. The mean total score of QoL instrument was 59.5 preoperatively compared with a mean score of 81.5. When looking at QoL aspects, the mean score of general vision and lighting aspect was 15 vs 25.5, while it was 105 vs 13 for mobility, 10 vs 12.5 for psychological adjustment and 23.5 vs 31 for reading, fine work and ADLs, for preoperative vs postoperative phases, respectively (Xu et al., 2016). The use of pre-post method in this kind of studies is much recommended, as it is the main indicator of the changes in VRQoL in patients, as well as the prospective method that allows the researchers to follow-up several changes in patients' outcomes. Moreover, this study has an advantage that it thoroughly explained the procedures conducted on patients, from phacoemulsification to determination of advanced glaucoma criteria, which helped

in narrowing the approach in a specific way.

2.5 Summary

In summary, according to this literature review, cataracts have significant negative effects on patients' quality of life, with the age being the most associated factor with worst VRQoL. Moreover, cataract surgeries help in improving VRQoL, as well as decreasing complications and mortality rates. Lastly, the used assessment tool of NEI-VFQ 25 is highly supported by other articles, as it is validated and has holistic view of patients' VRQoL aspects. Lastly, our paper will be most importantly adding to the literature that focuses on Palestine by assessing the QoL among Palestinians undergoing PC-*IOL* before and after the surgery. By assessing cataract patient, we will be able to investigate the most common factors that affect and associated QoL among Palestinian cataract patients prior and after cataract surgery. And we will reveal the factors that are associated with greatest improvement.

Chapter Three: Research Methodology

3.1 Introduction

An outline of the research methods used in this study is provided in this chapter. It includes the following: research sample, the context of the study, length of the research, data source, criterion for inclusion and exclusion Process of sampling, sample size, and sample, Pilot study, Validity, Reliability, Data collection, Variables (Study measures), Ethical consideration, Analysis plan and Limitation of the study.

3.2 Research Design

This longitudinal prospective study followed a cohort of pre- and post-cataract operations to achieve the study purpose of assessing the VRQoL for patients who were undergoing cataract surgery**.**

3.3 Setting of the study

The study was conducted in Palestine (West Bank), where it covered all the ophthalmic surgery in the southern, northern, and center regions of the West Bank. The study was conducted in all government hospitals in the WestBank that include cataract surgery, and they are distributed as:

- St. John Eye Hospital Group (Hebron) / 10

St. John Eye Hospital Group (Hebron) is one of St John of Eye Hospital Group's aims to save sight in the world’s most unique region facing decades of conflict resulting in the poorest people lacking the basic privileges of ordinary life.

St John of Eye Hospital Groups is the only charitable provider of expert eye care in the Holy Land and has hospitals, clinics and outreach services in the West Bank, Gaza, and Jerusalem. For over 140 years it has been treating patients regardless of ethnicity, religion or the ability to pay.

- An – Najah National University Hospital / 13

An-Najah National University Hospital is a non-profit private hospital, one of the teaching hospitals in Palestine. An-Najah National University Hospital was established in 2013 in partnership with the Faculty of Medicine and Health Sciences at An-Najah National University. It is located in the mountainous northwestern area of the city of Nablus, on the exit leading to the northern town of Asira.

- Hugo Chavez Hospital / 30

Hugo Chavez Eye Hospital is a specialized government hospital for surgery and ophthalmology affiliated with the Palestinian Ministry of Health, established in the Central West Bank in the town of Termsaya, established in 2011

- Specialized Arab Hospital (Noor Central) / 5

Al Noor Center for Eye Medicine and surgery is a medical center that provides all medical eye services such as LASIK and laser vision correction, cataract surgeries, all corneal transplants and retinal surgeries, in Nablus.

3.4 Population

The study sample consisted of all patients undergoing unilateral or bilateral phacoemulsification intraocular lens implantation (PE IOL) during the study period (between December 2021 to December 2022).

3.5 Sample and Sampling

The study sample consisted of all patients undergoing unilateral or bilateral phacoemulsification intraocular lens implantation (PE IOL) during the study period. The sample size was calculated using G*Power 3.1.9.6 software (Faul et al., 2007) on MacOS, which was based on t-test test family and differences between two dependent means (matched pairs) statistical test, with an effect size of 0.38 (based on means and standard deviation of a previous literature), error of 0.05 and power of 0.8, the recommended sample size was 57, as illustrated in the figure below.

Sampling was convenient, in which participants were chosen in a randomized non-regulated method, in which all planned surgeries during the specified time period were assigned with serial numbers linked to their names on separate paper (to do randomization on numbers only to hide names), and the numbers were placed in a container and randomly selected (each selected paper was selected and not returned to the container), until we reach the desired sample size.

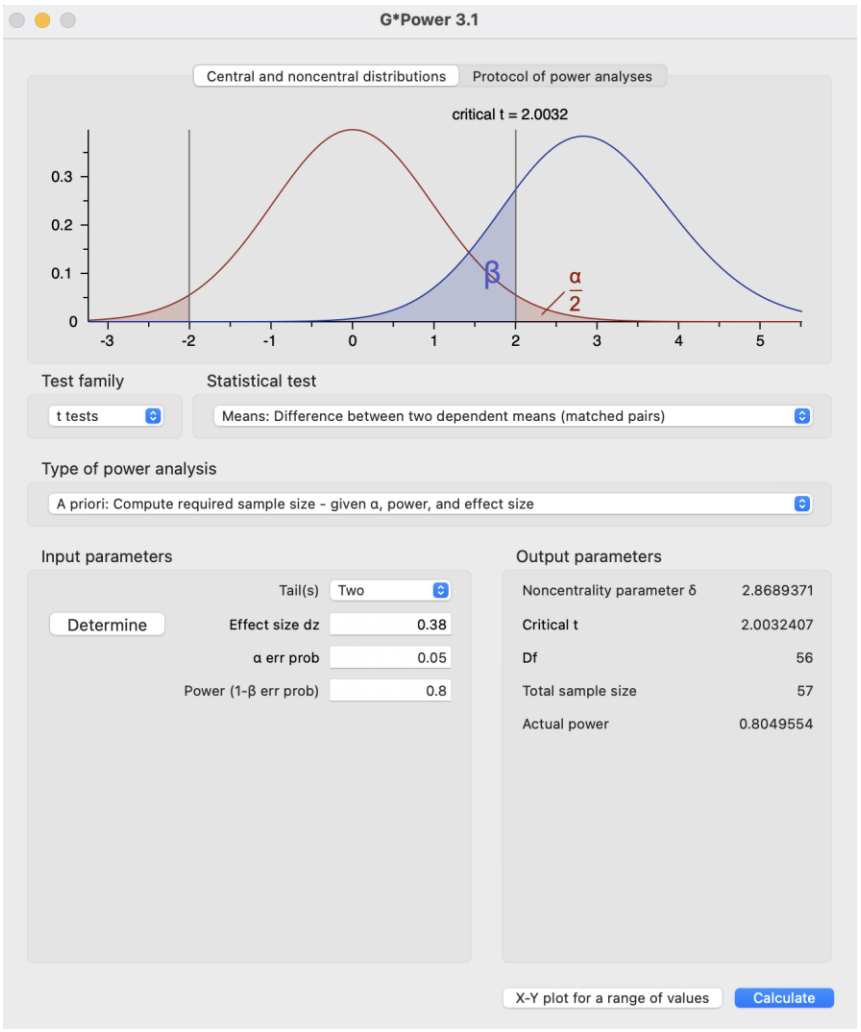

Figure 2 Sample size calculation using G*Power 3.1

3.6 Recruitment criteria

3.6.1 Inclusion Criteria

The study included all West Bank patients with a diagnosis of cataract who are 18 years of age or older, regardless of gender, educational attainment, occupation, or place of residence, and who are scheduled for unilateral or bilateral PE IOL surgery.

3.6.2 Exclusion Criteria

The study excluded patients with mental and the study excluded patients without major eye conditions like glaucoma, diabetic retinopathy, or macular degeneration. And Patients who had intravitreal injection treatment in the past, prior eye surgeries, and other ocular co-morbidities.

3.7 Duration of the Study

In October 2020, this study received ethical approval. Data was collected from December 2021 to December 2022 as indicated in the proposal and facilitated the task of the researcher.

3.8 Instrumentation and Data Collection

Data were collected via a self-administered questionnaire, and the researcher was present around for any trouble with reading or understanding the questionnaire questions. In order to fill out the questionnaire, patients who were unable to finish it at the hospital were interviewed over the phone. There were two sections to the questionnaire. Nine items in Part one of the questionnaire deal with basic demographic information, health considerations, and work factors. Gender, age, marital status, region, and educational attainment are included in the demographic data. Considerations include cataract type (unilateral or bilateral), time since diagnosis, and cause of cataract disease.

The second portion of the NEI-VFQ-25 questionnaire consists of 25 questions designed to evaluate patients' visual function and the way in which different eye illnesses affect their quality of life. The 25 questions are broken down into 12 subdomains, each containing one or more questions. These subdomains include Social Aspects, Activities of Daily Living, Distance-Vision Activities, Near-Vision Activities, and Ability to Drive

Cars, Dependency, Eye Pain, General Health, Mental Health, Vision, Color Vision, and Peripheral Vision. There are five possible answers for each question, and the score for each one varies from 0 to 100 points (0, 25, 50, 75, and 100 points).

Data collection was carried out before and 1 month after cataract surgery. The names and phone numbers of the participants were kept anonymous by linking them to a separate paper that contained their serial numbers, for called to participants to reassess their quality of life and compare the updated results to the initial pretest data.

3.9 Validity and Reliability

(Mangione et al., 2001) produced the NEI-VFQ-25 instrument, which has been widely verified in the literature, such as by Clemons et al. (2003) who claimed that the NEI-VFQ subscales demonstrated moderate to high internal consistency (Cronbach's = 0.58–0.91).

Furthermore, Revicki et al. (2010) discovered that the NEI VFQ-25 overall score had an internal consistency reliability of 0.96, with subscales ranging from 0.62 (ocular pain) to 0.91 (near activities). Total, near activities, distance activities, and dependency scores in the better and worse seeing eye (p-value = 0.0001) correlated significantly with SF-36 scores (p-value = 0.05), and total, near activities, distance activities, and dependency scores correlated significantly with best corrected visual acuity (BCVA) in the better (p-value = 0.0001) and worse seeing eye (p-value = 0.0001). Except for ocular pain and general health, mean NEI VFQ-25 total and subscale scores varied by BCVA group (P 0.001), with larger impairment levels seen in the lower visual acuity groups. The NEI VFQ-25 composite (Cronbach's, 0.95; intraclass correlation coefficient [ICC], 0.86), near activity (Cronbach's, 0.84; ICC, 0.80), and distant activity (Cronbach's, 0.84;

ICC, 0.84) scores showed good internal consistency and reproducibility, according to Sivaprasad et al. (2018). For the baseline NEI VFQ-25 composite (Pearson correlation [r] = 0.61 and 0.69, respectively), near activities (r = 0.69 and 0.73), and distance activities (r = 0.57 and 0.64) scores, convergent validity with the binocular measures, Minnesota Low-Vision Reading Test (MNRead) reading speed and Functional Reading Independence (FRI) index score, was demonstrated. Baseline mean NEI VFQ-25 scores (composite, close activities, and distance activities) revealed differences between patients with a mean maximum MNRead reading speed of 80 vs. 80 words per minute, and a mean FRI index score of 2.5 vs. 2.5 (p-value < 0.001).

Cronbach's Alpha was calculated for reliability using the Statistical Package for Social Sciences (SPSS) with an acceptable cut point of 0.7. (70 %), and the result for the current sample was 0.961, which indicated a very high level of internal reliability, as well as the ability to generalize the results on the study’s population in Palestine.

3.10 Pilot Study

In order to get feedback regarding the relativity, consistency, and order of questions, a pilot questionnaire was given to 13 participants (10% of the total sample size) who were not part of the sample study. Their responses were used to improve the way the questionnaire was administered. Each participant's time spent on this pilot study was limited to ten minutes.

3.11 Variables (Study Measures)

Table 1: Variables (Study Measures)

Dependent variable	Independent variable
Quality of life (QoL)	Demographic data
	Sociodemographic data

3.12 Ethical Consideration

Every study process followed the guidelines set forth in the Helsinki Declaration for research with human beings. The Helsinki committee in Gaza granted ethical approval, Palestinian MOH and St. John Hospital then received a letter of facilitation granting authority for data collecting. Before any data was collected, an Arabic consent form was received from each participant.

The names and phone numbers of the participants were kept anonymous by linking them to a separate paper that contained their serial numbers. The serial numbers were used for data analysis and blinding. However, names and phone numbers will not be disclosed until after the follow-up, when we called the participants to reassess their quality of life and compare the updated results to the initial pretest data.

3.13 Data Analysis

Using SPSS version 25, descriptive statistics were used to analyze demographical data, which included frequencies and percentages about age, gender, cause of cataract,

and other demographics. In addition, means, standard deviations and modes of scale items. Moreover, SPSS was used to analyze the relationship between the selected demographic data (as independent factors) and QoL (as a dependent factor), Differences between means were assessed through t-test for dependent samples. Because the used scale had a measurable scale, the dependent variable is going to be a continuous variable QoL, and depending on the selected independent variable (in demographic and other sociodemographic data), the type of test will be selected. For the relationship between categorical independent factors and dependent scale scores, the used tests were independent sample t-test for dichotomous independent variables and one-way ANOVA for non-dichotomous independent variables, with the conduction of post-hoc test for significantly correlated (p-value < 0.05) results. Lastly, paired-sample t-test was used to compare pretest and posttest QoL results, and Pearson correlation test was used for the correlation between scale independent factors and scale dependent scores.

Chapter Four: Results

4.1 Introduction

This chapter presents the findings of the current study, including both descriptive and analytical results. The descriptive results consist of frequencies, means, standard deviations, and other descriptive statistics related to the sociodemographic data of the study sample and their responses to the NEI-VFQ tool. On the other hand, the analytical results revolve around the relationship between the independent and dependent variables of the study, which are examined to test the study hypotheses.

4.2 Patients' Demographic Data

Table 1 presents the sociodemographic data of the patients who participated in the study, which was obtained before the operation. The data shown in the table indicates that the majority of the patients (63.8%) fall into the age category of over 55 years old, with an average age of 60.4 years old (standard deviation = 12.85 years). The age range of the patients varies from 19 to 85 years old. Additionally, there is a slightly higher proportion of male patients (53.4%) compared to female patients (46.6%). The majority of patients reside in rural regions, with 39.7% living in villages and 20.7% in towns. More than half of the patients (55.2%) have a high school education or lower, and around 44.8% of them live in a moderate socioeconomic class.

Approximately 67.5% of the patients are married, while roughly 63.8% said that they are not employed. The average length of time from the diagnosis of cataract was 1.18

years, with a standard deviation of 1.44 years. The duration ranged from less than one month to 7 years. The proportion of cases involving the right eye, left eye, or both eyes was comparable, with 34.5% for the right eye, 32.8% for the left eye, and 32.8% for both eyes. The etiology of the illness was unknown in 51.7% of cases. The following charts depict the frequency of the socioeconomic characteristics of the patients.

Table 2 : Distribution of patients' demographic data (n=58)

Variable	**Category**	**Frequency (n)**	**Percentage %**
Age	18 – 25 years old	2	3.4%
	26 – 35 years old	0	0.0%
	36 – 45 years old	4	6.9%
	46 – 55 years old	14	24.1%
	Older than 55 years old	37	63.8%
	Missing	1	1.7%
Gender	Male	31	53.4%
	Female	27	46.6%
Residency	City	17	29.3%
	Village	23	39.7%
	Town	12	20.7%
	Camp	2	3.4%
	Missing	4	6.9%
	Illiterate	7	12.1%

Educational level	High school or less	32	55.2%
	Diploma degree	8	13.8%
	Bachelor degree	10	17.2%
	Higher educations	1	1.7%
Perceived socioeconomic status	Bad	12	20.7%
	Fair	26	44.8%
	Very good	16	27.6%
	Excellent	4	6.9%
Social status	Single	3	5.2%
	Married	39	67.5%
	Divorced	3	19.0%
	Widowed	11	19.0%
	Missing	2	3.4%
Work status	Private sector	11	19.0%
	Public sector	7	12.1%
	Doesn’t work	37	63.8%
	Missing	3	5.2%
Involved eye	Right eye only	20	34.5%
	Left eye only	19	32.8%
	Both eyes	19	32.8%
Disease main cause	Age-related	4	6.9%
	Diabetes mellitus	9	15.5%
	Hypertension	9	15.5%

	Increased ocular pressure	4	6.9%
	Traumatic injury	2	3.4%
	Not known	30	51.7%

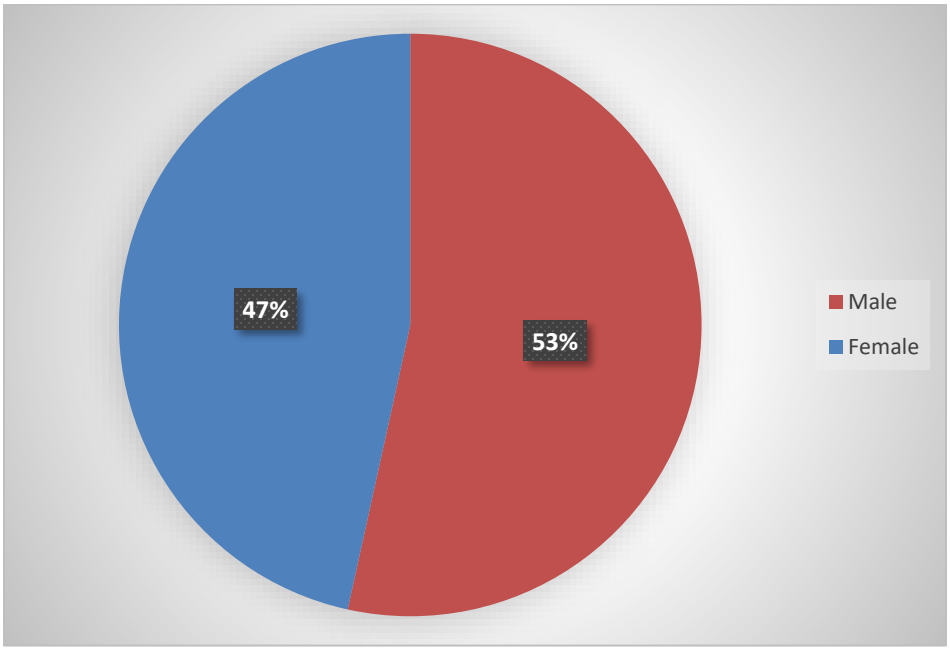

Figure 3: Distribution of patients' gender

4.3 Preoperative and Postoperative NEI-VFQ-25 Responses

Table 2 displays the answers to the NEI-VFQ-25 instrument before and after surgery, as well as the statistical significance of the variations in mean scores for each question between the two periods.

The table is categorized into three primary categories based on the official NEI-VFQ-25 edition of 2000. The first portion focuses on the patients' preoperative and postoperative overall health and visual acuity. This section demonstrated a statistically significant difference (p-value = 0.028) in the proportions of patients who reported better

overall health between the preoperative period (22.4% excellent, 32.8% very good) and the postoperative phase (25.9% excellent, 34.5% very good). Specifically, none of the patients reported their visual acuity.

Preoperatively, both individuals had excellent eyesight. However, postoperatively, the percentage of individuals with excellent eyesight decreased to 53.4% (p-value < 0.001).

There was a significant increase in the percentage of individuals who no longer had concerns about their eyesight, from 8.6% to 32.8% (p-value = 0.001). There were no significant changes in the level of pain or discomfort experienced by the patients in or around their eyes during both phases (p-value = 0.745).

The second section focused on the challenges that patients encounter in various activities. It revealed a significant increase in the proportion of patients who reported having no difficulties in these activities. Specifically, there was an increase in the ability to read from newspapers (from 8.6% to 58.6%), engage in hobbies that require close vision such as cooking, sewing, and fixing things around the house (from 25.9% to 67.2%), find items on crowded shelves (from 34.5% to 72.4%), read street signs or store names (from 17.2% to 69.0%), navigate steps, stairs, or curbs in dim light or at night (from 17.2% to 67.2%), notice objects to the side while walking alone (from 22.4% to 74.1%), perceive people's reactions to their statements (from 10.3% to 67.2%), select and match clothes (from 51.7% to 81.0%), socialize with people in their homes, at parties, or in restaurants (from 43.1% to 81.0%), and attend movies, plays, or sports events (from 25.9% to 72.4%) between the preoperative and postoperative phases, respectively (p-value < 0.001).

Regarding patients' ability to drive, there was no change in the percentage of drivers between the preoperative and 1-month postoperative phases. Specifically, 32.8% of the

patients reported driving sometimes throughout both periods. Out of the group of those who do not drive (67.2%), 41.4% said that they had never driven before, while 25.9% reported that they stopped driving. Among those who stopped driving, 15.5% claimed that they did so for reasons other than vision. Conversely, the proportion of driving patients who had no difficulty when driving throughout the day in familiar locations grew considerably from 5.2% to 24.1%, while the proportion experiencing considerable difficulty reduced from 12.1% to 0% (p-value < 0.001). The proportion of patients who reported no trouble when driving at night improved significantly from 0% to 20.7% during the preoperative and postoperative phases (p-value < 0.001).

Similarly, the proportion of patients who reported no problem while driving in poor weather and rush hours increased from 5.2% to 22.4% (p-value = 0.010).

The previous part focused on patients' reactions to eyesight impairments. In this section, we compared the changes in the frequency of activity difficulties caused by the patient's vision. The percentage of patients who experienced a decrease in their ability to accomplish what they wanted all of the time due to vision-related issues decreased from 20.7% to 3.4%. Conversely, the percentage of patients who experienced this problem none of the time increased from 13.8% to 32.8% (p-value < 0.001). Similar changes were observed in patients who had limited work or activities due to vision-related issues. The percentage of patients who experienced this problem all of the time decreased from 22.4% to 5.2%, while the percentage of patients who experienced it none of the time increased from 15.5% to 39.7%. However, there were no notable alterations in the pain or discomfort produced by vision in or around the eye. The proportion of those experiencing this

symptom constantly grew insignificantly from 0% to 6.9%, whereas the percentage of those not experiencing it at all increased from 41.4% to 53.4% (p-value = 0.557).

The second segment of the third portion focused on the patients' perspective of whether their eyesight was responsible for a range of visual issues. The percentage of individuals experiencing difficulties with staying at home due to eyesight issues increased significantly from 37.9% to 58.6% (p-value = 0.001). Similarly, there was an increase in the percentage of individuals feeling frustrated (37.9% to 53.4%), having reduced control over their actions (34.5% to 60.3%), requiring more assistance from others (43.1% to 63.8%), and worrying about embarrassing themselves or others (37.9% to 63.8%, p-value < 0.001) during the postoperative phase compared to the preoperative phase. However, there was no significant change in the frequency of relying too much on others' information due to eyesight problems (50% to 67.2%, p-value = 0.71).

Table 3 : The differences between preoperative and postoperative score means of NEI-VFQ-25

Sentence	**Options**	**Preoperative**		**Postoperative**		**p-value**
		Freq.	**%**	**Freq.**	**%**	
Section 1: General Health and Vision						
1. In general, would you say your overall health is:	Excellent	13	22.4%	15	25.9 %	0.028
	Very good	19	32.8%	20	34.5 %	
	Good	13	22.4%	15	25.9 %	

	Accepted	12	20.7%	6	10.3 %	
	Poor	1	1.7%	2	3.4%	
2. At the present time, would you say your eye sight using both eyes (with glasses or contact lenses, if you wear them) is:	Excellent	0	0.0%	31	53.4 %	< 0.001
	Good	16	27.6%	16	27.6 %	
	Fair	22	37.9%	8	13.8 %	
	Poor	11	19.0%	3	5.2%	
	Very poor	9	15.5%	0	0.0%	
3. How much of time do you worry about your eyesight?	None of the time	5	8.6%	19	32.8 %	0.001
	A little of the time	19	32.8%	16	27.6 %	
	Some of the time	13	22.4%	9	15.5 %	
	Most of the time	17	29.3%	7	12.1 %	
	All of the time	4	6.9%	7	12.1 %	
4. How much pain or	None	26	44.8%	30	51.7 %	0.745

discomfort have you had in and around your eyes (for example, burning, itching or aching)? Would you say it is:	Mild	18	31.0%	15	25.9 %	
	Moderate	12	20.7%	9	15.5 %	
	Severe	1	1.7%	3	5.2%	
	Very severe	1	1.7%	1	1.7%	

Section 2: Difficulty with activities (Preoperative in first row, postoperative in second row for each activity)

(1 = No difficulty at all, 2 = A little difficulty, 3 = Moderate difficulty, 4 = Extreme difficulty

5 = Stopped doing this because of your eyesight, 6 = Stopped doing for other reasons or not interested in it)

Activity	**1**		**2**		**3**		**4**		**5**		**6**		**p-value**
	F	**%**	**F**	**%**	**F**	**%**	**F**	**%**	**F**	**%**	**F**	**%**	
5.Reading ordinary print in newspaper	5	8.6%	9	15.5%	22	37.9%	12	20.7%	4	6.9%	6	10.3 %	< 0.001
	34	58.6%	11	19.0%	4	6.9%	2	3.4%	1	1.7%	6	10.3 %	
6. Hobbies that require to see well up close (cooking, fixing, … etc.)	15	25.9%	18	31.0%	8	13.8%	10	17.2%	4	6.9%	3	5.2%	< 0.001
	39	67.2%	9	15.5%	5	8.6%	2	3.4%	0	0.0%	3	5.2%	

5. Finding something on a crowded shelf	20	34.5%	13	22.4%	12	20.7%	11	19.0%	2	3.4%	0	0.0%	< 0.001
	42	72.4%	7	12.1%	8	13.8%	1	1.7%	0	0.0%	0	0.0%	
6. Reading street signs or the names of the stores	10	17.2%	10	17.2%	21	36.2%	10	17.2%	3	5.2%	4	6.9%	< 0.001
	40	69.0%	7	12.1%	6	10.3%	1	1.7%	0	0.0%	4	6.9%	
7. Going down steps or stairs in dim light or at night	10	17.2%	12	20.7%	14	24.1%	18	31.0%	4	6.9%	0	0.0%	< 0.001
	39	67.2%	10	17.2%	7	12.1%	2	3.4%	0	0.0%	0	0.0%	
8. Noticing objects off to the side while you are walking along	13	22.4%	17	29.3%	13	22.4%	15	25.9%	0	0.0%	0	0.0%	< 0.001
	43	74.1%	9	15.5%	4	6.9%	2	3.4%	0	0.0%	0	0.0%	

9. Seeing how people react to things you say	6	10.3%	9	15.5%	17	29.3%	23	39.7%	3	5.2%	0	0.0%	< 0.001
	39	67.2%	13	22.4%	4	6.9%	1	1.7%	1	1.7%	0	0.0%	
10. Picking out and matching your own clothes	30	51.7%	18	31.0%	4	6.9%	4	6.9%	2	3.4%	0	0.0%	< 0.001
	47	81.0%	5	8.6%	5	8.6%	1	1.7%	0	0.0%	0	0.0%	
11. Visiting with people in their homes, at parties or in restaurants	25	43.1%	9	15.5%	10	17.2%	9	15.5%	5	8.6%	0	0.0%	< 0.001
	47	81.0%	4	6.9%	4	6.9%	2	3.4%	1	1.7%	0	0.0%	
12. Going out to see movies, plays or sports events	15	25.9%	14	24.1%	14	24.1%	8	13.8%	5	8.6%	2	3.4%	< 0.001
	42	72.4%	10	17.2%	3	5.2%	1	1.7%	0	0.0%	2	3.4%	
Question	**Options**			**Preoperative**				**Postoperative**					

		Freq.	**%**	**Freq.**	%	
13. Are currently driving, at least once in a while?	Yes	19	32.8%	19	32.8%	0.322
	No	39	67.2%	39	67.2%	
a. If no, have you never driven a car or have you given up driving?	Never drove	24	41.4%	24	41.4%	0.322
	Gave up	15	25.9%	15	25.9%	
b. If you gave up driving, was that mainly because of?	Eyesight	2	3.4%	2	3.4%	---
	Other reasons	9	15.5%	9	15.5%	
	Both	5	8.6%	5	8.6%	
c. If currently driving, how much is the difficulty in	None at all	3	5.2%	14	24.1%	< 0.001
	A little difficulty	8	13.8%	5	8.6%	
	Moderate	7	12.1%	0	0.0%	
	Extreme	1	1.7%	0	0.0%	

daytime in familiar places?													
Activity	**1**		**2**		**3**		**4**		**5**		**6**		**p-value**
	F	**%**	**F**	**%**	**F**	**%**	**F**	**%**	**F**	**%**	**F**	**%**	
14. Driving at night	0	0.0%	6	10.3%	6	10.3%	2	3.4%	3	5.2%	2	3.4%	< 0.001
	12	20.7%	3	5.2%	0	0.0%	2	3.4%	0	0.0%	2	3.4%	
a. Driving in difficult conditions as in bad weather or rush hour	3	5.2%	6	10.3%	4	6.9%	2	3.4%	2	3.4%	2	3.4%	0.010
	13	22.4%	0	0.0%	2	3.4%	1	1.7%	0	0.0%	3	5.2%	
Section 3: Responses to vision problems (Preoperative in first row, postoperative in second row for each activity) (1 = All of the time, 2 = Most of the time, 3 = Some of the time, 4 = A little of the time, 5 = None of the time)													
Activity	**1**		**2**		**3**		**4**		**5**				**p-value**
	F	**%**	**F**	**%**	**F**	**%**	**F**	**%**	**F**	**%**			
15. Do you accomplish less because of	12	20.7%	15	25.9%	15	25.9%	8	13.8%	8	13.8%			< 0.001
	2	3.4%	5	8.6%	7	12.1%	25	43.1%	19	32.8%			

your vision?										
16. Are you limited in work because of your vision?	13	22.4%	13	22.4%	11	19.0%	12	20.7%	9	15.5%	< 0.001
	3	5.2%	4	6.9%	8	13.8%	20	34.5%	23	39.7%	
17. How much pain or discomfort keep you from doing what you like?	0	0.0%	8	13.8%	9	15.5%	17	29.3%	24	41.4%	0.557
	4	6.9%	3	5.2%	9	15.5%	11	19.0%	31	53.4%	

(1 = Definitely true, 2 = Mostly true, 3 = Not sure, 4 = Mostly false, 5 = Definitely false)

Because of my eyesight:	**1**		**2**		**3**		**4**		**5**		**p-value**
	F	**%**	**F**	**%**	**F**	**%**	**F**	**%**	**F**	**%**	
18. I stay home most of the time	6	10.3%	8	13.8%	4	6.9%	18	31.0%	22	37.9%	0.001
	5	8.6%	5	8.6%	1	1.7%	13	22.4%	34	58.6%	
	5	8.6%	13	22.4%	9	15.5%	9	15.5%	22	37.9%	

19. I feel frustrated a lot of the time	3	5.2%	4	6.9%	5	8.6%	15	25.9%	31	53.4%	< 0.001
20. I have much less control over what I do	5	8.6%	13	22.4%	6	10.3%	14	24.1%	20	34.5%	< 0.001
	2	3.4%	4	6.9%	2	3.4%	15	25.9%	35	60.3%	
21. I have to rely too much on what other people tell me	4	6.9%	10	17.2%	6	10.3%	9	15.5%	29	50.0%	0.712
	3	5.2%	3	5.2%	2	3.4%	11	19.0%	39	67.2%	
22. I need a lot of help from others	5	8.6%	8	13.8%	3	5.2%	17	29.3%	25	43.1%	< 0.001
	2	3.4%	3	5.2%	2	3.4%	14	24.1%	37	63.8%	
23. I worry about doing	7	12.1%	11	19.0%	4	6.9%	14	24.1%	22	37.9%	< 0.001
	4	6.9%	4	6.9%	5	8.6%	8	13.8%	37	63.8%	

embarrassing things											

Table 3 presents our analysis of the influence of eye surgery on individuals' views, as assessed using the NEI-VFQ-25 questionnaire. This tool evaluates many facets of vision-related quality of life. Upon doing a thorough analysis of the data, we discovered significant improvements in all areas subsequent to the surgical procedure. More precisely, individuals expressed an improvement in their overall health in relation to their eyesight, as shown by ratings that rose from around 62 to 74 out of 100. Additionally, they saw a significant reduction in the challenges associated with visual impairments, as shown by the scores increasing from about 64 to around 92 out of 100. In addition, their ability to address visual issues showed improvement, increasing from about 63 to around 79 out of 100. The average score for all components of NEI-VFQ-25 increased dramatically from around 66 to 86 out of 100 after the procedure. The observed enhancements were statistically significant, as shown by a p-value of less than 0.001. In order to provide a clearer representation of these modifications, we have provided a diagram that illustrates the scores before and after the surgery for each individual sub-scale as well as the total NEI-VFQ scale.

Table 4 : Differences between preoperative and postoperative subscales and overall NEI-VFQ-25 scores

Scale	Preoperative				Postoperative				p-value
	Min.	Max.	Mean	SD	Min.	Max.	Mean	SD	
General health	22.5	95.0	62.37	17.97	22.5	100.0	74.37	20.14	< 0.001
Difficulty with activities	15.0	95.0	64.36	19.67	25.0	100.0	91.81	15.35	< 0.001
Response to vision problems	5.6	100.0	62.78	27.92	5.6	100.0	79.35	25.03	< 0.001
Overall NEI-VFQ-25	23.5	92.6	66.12	18.45	22.2	100.0	86.01	17.83	< 0.001

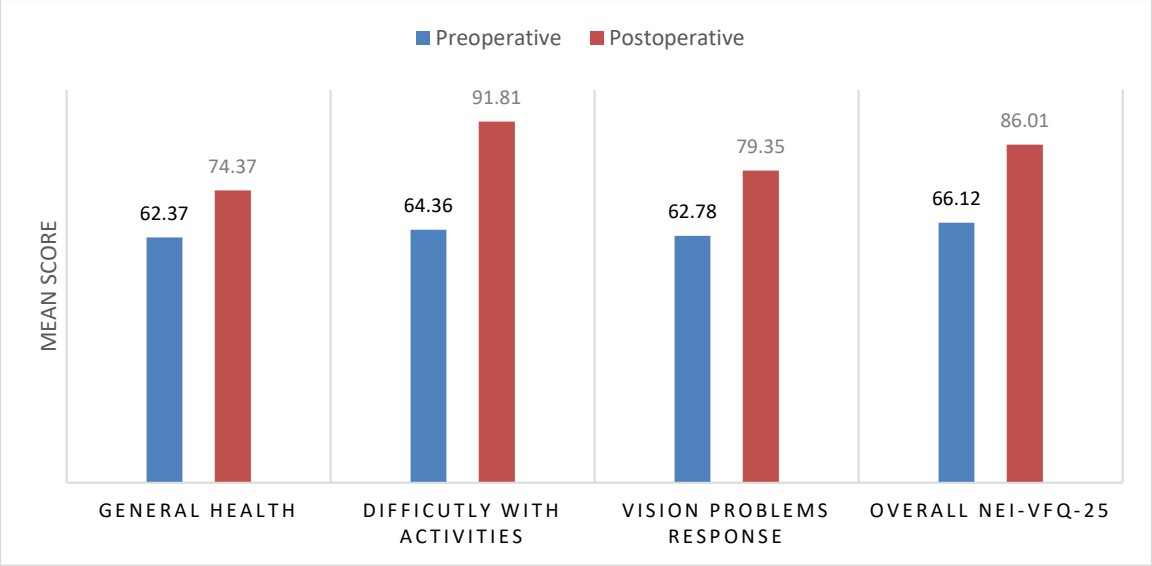

Figure 4: Average scores for each NEI-VFQ-25 subscale and overall evaluation.

4.3 : Preoperative-postoperative changes among patients

Table 4 examined the differences between several sociodemographic characteristics and the enhancement of vision after surgery, using statistical techniques such as t-tests and ANOVA. Surprisingly, the majority of sociodemographic characteristics

did not exhibit a significant difference with an improvement in NEI-VFQ-25 scores, with one notable exception of the onset of vision.

Individuals with cataracts resulting from elevated pressure in the eye showed the most notable improvement in vision, with an average rise of 36.95 points in NEI-VFQ-25 scores. Subsequently, those with hypertension saw a mean enhancement of 29.93 points. Individuals with idiopathic cataracts also shown a significant enhancement, with an average rise of 17.92 points.

In contrast, those with traumatic cataracts showed the smallest recovery, with an average rise of about 11.73 points. Age and diabetes mellitus were similarly linked to moderate enhancements, with mean increments of 12.75 and 16.30 points, respectively.

In summary, these results indicate that while most sociodemographic parameters did not have a significant impact on the enhancement of vision after surgery, the underlying etiology of cataract had a major effect in predicting the degree of improvement. This emphasizes the significance of taking into account the fundamental aspects while evaluating the efficacy of eye surgery results.

Table 5 : Sociodemographic Factors and Improvement in Eyesight Post-Surgery

Variable	**Values**	**Mean difference**	**p-value**
Gender	Male	20.84	0.55
	Female	18.54	
Residency	City	22.26	0.78
	Village	18.45	
	Town	20.76	
	Camp	26.73	

Educational level	Illiterate	22.6	0.8
	High school or less	21.71	
	Diploma degree	15.81	
	Bachelor degree	17.19	
	Higher educations	20.21	
Perceived socioeconomic status	Bad	20.06	0.4
	Fair	23.24	
	Very good	16.13	
	Excellent	15.16	
Social status	Single	9.63	0.41
	Married	19.42	
	Divorced	19.27	
	Widowed	25.43	
Work status	Private sector	17.84	0.8
	Public sector	21.86	
	Doesn’t work	19.08	
Involved eye	Right eye only	24.01	0.15
	Left eye only	15.56	
	Both eyes	19.54	
Disease main cause	Age-related	12.75	0.03
	Diabetes mellitus	16.3	
	Hypertension	29.93	
	Increased ocular pressure	36.95	

	Traumatic injury	11.73	
	Not known	17.92	

Table 5 presents the relationships among patients' age, disease history, and the changes in NEI-VFQ-25 scores before and after surgery. The correlation coefficient quantifies the magnitude and orientation of the association between two variables. The correlation coefficient between age and the differences in NEI-VFQ-25 scores in this example was 0.23. The data indicates a favourable association between patients' age and improvements in their NEI-VFQ-25 scores, however the relationship is only slight.

Conversely, there was a very weak connection of -0.004 between illness history and the variations in NEI-VFQ-25 scores. The close-to-zero correlation suggests that there is a little or insignificant connection between the history of illness and the degree of improvement in NEI-VFQ-25 scores after surgery.

These associations suggest that age may have a little influence on the improvement in vision-related quality of life after surgery, but illness history seems to have little or no effect on this outcome.

Table 6 : Correlations between Patients' Age, Disease History, and Changes in NEI-VFQ-25 Scores Post-Surgery

Factor	**Changes in NEI-VFQ-25 Scores**	**p-value**
Age	0.23	0.09

Disease history (years)	- 0.004	0.98

Post hoc test using Tukey's approach was conducted for the relationship between the main cause of disease and the differences in NEI-VFQ-25 scores, to determine which specific groups of the main cause of disease showed statistically significant differences in NEI-VFQ-25 scores, and was used because the initial ANOVA indicated significant differences among groups, and Tukey's method is appropriate for comparing multiple group means while controlling for Type I error.

The post hoc test shows that none of the categories of disease cause significantly differs with any of other causes in the mean differences (p-value > 0.05), and while the one-way ANOVA showed a significant relationship between disease cause and difference in NEI-VFQ-25 scores between preoperative and postoperative phases, this is a common situation in statistics, because the ANOVA is testing for any differences across the groups as a whole, while post hoc tests are looking at pairwise comparisons and adjusts for multiple testing, therefore increases the threshold for significance.

Table 7 : Post hoc test for the differences in pre-post changes in NEI-VFQ-25 scores according to disease cause

(I) Disease cause	(J) Disease cause	Mean Difference (I-J)	Std. Error	p-value	95% CI	
					Lower Bound	Upper Bound
Age-related	Diabetes mellitus	-3.55	8.51	0.998	-28.88	21.78

	Hypertension	-17.18	8.67	0.369	-43.00	8.63
	Ocular pressure	-24.20	10.26	0.193	-54.75	6.34
	Trauma	1.01	11.48	1.000	-33.14	35.17
	Not known	-5.17	7.64	0.984	-27.90	17.55
Diabetes mellitus	Age -related	3.55	8.51	0.998	-21.78	28.88
	Hypertension	-13.63	6.51	0.308	-33.00	5.73
	Ocular pressure	-20.65	8.51	0.169	-45.98	4.67
	Trauma	4.57	9.94	0.997	-25.01	34.14
	Not known	-1.62	5.04	1.000	-16.62	13.37
Hypertension	Age -related	17.18	8.67	0.369	-8.63	43.00
	Diabetes mellitus	13.63	6.51	0.308	-5.73	33.00
	Ocular pressure	-7.02	8.67	0.964	-32.83	18.80
	Trauma	18.20	10.08	0.473	-11.80	48.19
	Not known	12.01	5.31	0.231	-3.80	27.82
Ocular pressure	Age -related	24.20	10.26	0.193	-6.34	54.75
	Diabetes mellitus	20.65	8.51	0.169	-4.67	45.98
	Hypertension	7.02	8.67	0.964	-18.80	32.83
	Trauma	25.22	11.48	0.259	-8.93	59.37
	Not known	19.03	7.64	0.148	-3.70	41.76
Trauma	Age -related	-1.01	11.48	1.000	-35.17	33.14
	Diabetes mellitus	-4.57	9.94	0.997	-34.14	25.01
	Hypertension	-18.20	10.08	0.473	-48.19	11.80
	Ocular pressure	-25.22	11.48	0.259	-59.37	8.93
	Not known	-6.19	9.20	0.984	-33.57	21.19
Not known	Age -related	5.17	7.64	0.984	-17.55	27.90
	Diabetes mellitus	1.62	5.04	1.000	-13.37	16.62

	Hypertension	-12.01	5.31	0.231	-27.82	3.80
	Ocular pressure	-19.03	7.64	0.148	-41.76	3.70
	Trauma	6.19	9.20	0.984	-21.19	33.57

Chapter Five: Discussion

5.1 Introduction

This chapter is dedicated to discussing the study's results of the preoperative and postoperative findings related to the VRQoL, and the differences between them, as well as the most common factors that affected these findings. The discussion is based on providing a critical overview of the results and methodological approaches that were used, in addition to the comparison between the current results and the findings of previous studies that were reviewed earlier.

5.2 Discussion

This is one of the first studies to examine the association between Pre-and Post-Operative Quality of Life for Patients Undergoing Cataract Surgery for an ageing population in Palestine, in spite of the large number of studies attempting to analyze the validity of various assessment instruments, there is a shortage of this kind of study in the Middle East, and specifically in Palestine. This is evidently caused by the lack of knowledge about the significance of evaluating patients' quality of life following cataract procedures, as well as the physicians' emphasis on physiological rather than mental well-being.

In terms of the sociodemographic characteristics of the patients who participated in the study, the descriptive results showed that more than half of them are older than 55 years old (63.8%). which is expected in this type of studies, where literature and evidence-based medicine approve that cataract and ocular-related deficiencies and diseases are more common in older populations, which is mostly related to the degeneration of vision and

eye tissues, as well as the relatively higher prevalence of risk factors, such as HTN and DM. Moreover, only 29.3% of the patients live in cities, leaving the rest of the patients (71.7%) living in rural areas.

The majority of the previous study sample consisted of older participants, with a mean age of ~66 years, which is consistent with reports of other studies where the mean age of participants was higher than 60 years (Bandhu et al., 2016; Zitha & Rampersad, 2020; Zuo et al., 2015).Impact of cataract surgery in quality of life of patients). This indicates that the majority of patients who complain of cataracts live in rural areas, which could be attributed to a variety of factors, including limited access to advanced vision care services in rural areas, as well as a higher level of awareness and cultural capacity among urban patients about the importance of frequent vision assessment and evaluation.

Zitha et al reported that**,** as age-related cataracts are the most common type of cataracts and often the affected individuals may present late for surgical intervention(Zitha & Rampersad, 2020). In this study, there were slightly more women, which is consistent with the results observed in previous studies(Javed et al., 2015; Sharma et al., 2015) perhaps in our study the finding was 53.4 % of male patient, 46.6 % of the patient female, This can be added to the assumption that less-literate persons have lower levels of awareness of vision care culture and frequent re-evaluation of visual health conditions, particularly among high-risk populations and those who already have cataracts.

In our study, In terms of cataract-related factors among the involved patients, the researcher effectively included patients with approximate percentages based on the affected eye, with 34.5%, 32.8%, and 32.8% of the patients having cataracts in their right,

left, or both eyes, respectively. Having about equal percentages helps to reduce selection bias. The percentages of known causes of the disease show that the most common causes are HTN and DM (15.5% each), accounting for around one-third of cataract occurrences. On the other hand, more than half of the cases (51.7%) were reported by patients to have no known cause, which could be viewed as patients' poor diagnosis and follow-up practices when clear causes are unknown. Furthermore, the current study did not account for factors that have been linked to cataract formation, such as prolonged exposure to sunlight (Rampersad & Zitha, 2020), the use of certain medications, particularly tricyclic antidepressants, insulin, and antiarrhythmic agents(Deng et al., 2023), or the research gap.

The current study implemented the pretest-posttest design, which took advantage of quantitatively measuring the effectiveness of cataract surgeries on the QoL of the patients, as well as seeking the individual differences in such relationships. Also, it provides more statistical power than having only one measurement (Alessandri et al., 2017; Pan & Sana, 2021). The study also took advantage of using a valid tool in the measurement process, which grants the validity and reliability of the results between pretest and posttest phases.

Kien Gia To reported that, The NEI VFQ-25 questionnaire assesses not only visual task difficulty but also the impact of visual impairment on social functioning, mental health, role challenges, and reliance (14). although, the study found that cataract surgery benefits not only daily activities but also social and mental health. However, the NEI VFQ-25's one-dimensionality may decrease its validity due to its combination of visual functioning and socioemotional constructs(Kien Gia To, Lynn B. Meuleners, et al., 2014).

The main result of the current study is focused on that all subscales of NEI-VFQ-25 significantly improved in the posttest phase compared to the pretest phase, which achieves the main aim of the study and shows that cataract surgeries are effective in improving the VRQoL among patients. On the other hand, some comments can be set on the insignificant changes in specific items, like pain or discomfort (p-value = 0.745), This is supported by the fact that the primary reason for cataract patients to undergo surgery is visual causes, rather than pain, itching, or burning feelings. Furthermore, the percentages of patients about their driving have not changed, giving an insignificant value, which can be interpreted by that patients' driving habits and related decisions to start or stop driving may not be modified in the relatively short postoperative follow-up time.

The importance of detecting the specific cause of cataract among patients appears in the finding that there was a significant difference in the improvement scores among cataract patients based on their disease main cause. The largest difference between pretest and posttest phases (indicating better improvement) appeared in patients with causes of increased IOP (mean = 36.957) and HTN (mean = 29.938, p-value = 0.036), which represents the highest level of benefit fr Another observation about the relationships between sociodemographic factors and improvement in VRQoL is the lack of a significant correlation between patient age and pretest-posttest differences (r = 0.238, p-value 0.097), which can be attributed to the high proportion of patients over the age of 55.

According to Jain et al. (2019)cataract surgery-related factors can have a considerable impact on surgical outcomes, particularly QoL, which was not specifically investigated in the current study. The current study only considered the involved eye as the only cataract-related factor, excluding the cause, and discovered that the involved eye had

no significant effect on the pretest-posttest difference in VRQoL scores (p-value = 0.159), supporting the notion that cataract surgeries benefit either or both eyes. In addition, various cataract- and cataract surgery-related aspects should be investigated in future studies to determine their impact and link with improved VRQoL, whether in Palestine or around the world.

Heemraz et al. (2016)employed a different tool than in the current study, which was the GBI, and the key comparison between the two studies is in terms of the main findings linked to the factors that influence the improvement in VRQoL among cataract patients. world. Both studies agree that gender and age had no significant effect on improving VRQoL, whereas the previous study found significant differences across ethnic groups, which is not applicable in the current study's setting (Palestine), which lacks ethnic diversity in comparison to Western countries.

The findings emphasize the need of comparing multiple VRQoL evaluation instruments, as well as the fact that disparities between pretest and posttest results of cataract procedures are frequently uniform despite the use of diverse measurement tools. This is also evident in the Chinese study of Gong et al. (2018),who compared outcomes using VAS and VF-14, despite the comparison of outcomes based on involvement in preoperative nursing care, which is also recommended to be replicated in Palestine, as the nursing role in preoperative care, focusing on the psychological aspects of the outcomes, is required.

Ka et al. (2017) reported that, discovered that age is a significant factor influencing the improvement in VRQoL scores, with younger patients benefiting more from the

operation, as seen by a greater increase in mean scores between the pretest and posttest phases. This conclusion contradicted the current study, which found that age was not a significant factor influencing pretest-posttest differences (p-value = 0.097), which could be attributed to the use of different VRQoL methods throughout the studies.

The current study's measure (NEI-VFQ-25) is one of the most commonly utilized for evaluating VRQoL, particularly among cataract patients. This instrument was supported by its use in multiple nations, as well as the inclusion of a variety of subscales that reflect various aspects of visual care. As a result, the focus of this discussion section is on the comparison of present study findings to earlier publications that used the indicated tool. Aside from validity, one of the elements that influenced the researcher's decision to utilize the NEI-VFQ-25 was the ease of scoring system, which is based on extracting a score out of 100 for each subscale and the overall score, making it easier to interpret.

Although Teles et al. (2020a)included patients with many changes from those recruited in the current trial, the fundamental finding in terms of significant increase in VRQoL is identical. The prior study had a greater mean age (mean = 72 years old vs 60.4 years old) and a higher number of females (65.8% vs 46.6%). This is supported by the findings that age and gender were not significantly related to differences in the improvement of VRQoL, and therefore, it is interpreted that the two studies found a common overall significant improvement in VRQoL despite the inclusion of patients with differences in demographic factors. The studies also share the results that pain was the domain of non-significant difference in VRQoL improvement. On the other hand, both studies share a limitation related to the small sample size, where the previous study

included 41 patients, and the current study included 58 patients, which was due to lack of time and academic pressure.

The study in Ghana by Amedo et al. (2017) have some differences in the demographics of the included patients than in the current study, including wider range of age (12 – 99 years old compared to 18 – 85 years old, respectively), in which the current study targeted adult patients only, with relatively larger percentage of female patients (52.3% vs 46.6%, respectively), while the sample size was somehow larger (70 vs 58). On the other hand, both studies found that all domains of VRQoL as measured by NEI-VFQ-25 showed significant improvements postoperatively, taking in consideration that the previous study re-assessed the patients after two months, compared to one year in the current study.

The previous study also shed light on the role of socio-economic and cultural factors in the area of cataract surgeries. In the previous study, they stated that QoL and decisions related to cataract management and surgery are affected by such factors, including the effect of culture and level of awareness. In the current study, some specific details can be mentioned. For example, most of the patients were living in rural areas, and this highly affects the socioeconomic status scale, leading to differences in choosing the location and type of surgery options according to availability in nearby settings and pricing. Also, the health system and insurance system affect the available options, especially for patients with lower socioeconomic statuses, especially that 20.7% and 44.8% of patients ranked their socioeconomic status as bad or fair, respectively, compared to 27.6% and only 6.9% of patients who ranked it as very good or excellent, respectively. It is worth noting that 30 of the 58 patients who were included in the current study underwent the surgery in

Hugo Chavez Hospital, which is the only governmental hospital for eye surgeries in the included settings, which means that the number of surgeries is disproportionate between Palestinian hospitals according to their type. It is also recommended to conduct a quality-of-care-related study that investigates the quality-related and outcomes of cataract surgeries between governmental and private settings in Palestine, as such studies highlights the improvement and enhancement needs for the health sector in the area of cataract surgery.

The study of K. G. To et al. (2014) contains several differences than the current study, including the significantly larger sample size (413 vs 58, respectively), which may be sue to the larger population of Vietnam than Palestine, and the inclusion of bilateral, age-related cataract, older than 50 years old and phacoemulsification-only surgeries, compared to all locations of cataracts and adults patients (18 – 82 years old) who had cataract related to several causes in the current study, although some of the patients in the previous study did not complete their surgeries and had one-eye surgery. As found by other comparisons, and despite such differences in patients' characteristics, all subscales of VRQoL showed significant improvement after the surgery, which is parallel with the findings of the current study. The previous study also compared the differences in (VRQoL) according to changes in specific visual tests, like acuity and sensitivity, which was not applied in the current study due to specific limitations of available data, which gives the previous study an advantage over the current study.

The Norwegian study of Schippert et al. (2018) has included patients who are older than 60 years old and was conducted in a single center (a university hospital), which is different from the current study, where patients who are older than 18 years old were

included, and was conducted in four settings, including one University hospital (An-Najah National University Hospital). It is worth noting that university hospitals, in general, tend to have some advantages over other hospitals in surgeries, including cataract surgeries, like the access to latest technologies and techniques, research and development opportunities, having high-quality staff, educational environment and comprehensive care, among others.

The differences between the current study and the Chinese study of Zhu et al. (2017) in that the previous study used a different VRQoL tool, included larger sample size (n = 126), who are diabetic retinopathy-related cataract only, and aged between 45 and 82 years old, and yet the main findings are the same with the current study in that all domains of VRQoL have been improved postoperatively, this adds to the notion of the efficiency of cataract surgeries on the VRQoL as found in several studies despite the inclusion criteria, sampling, and data collection tool. The same applies to the previous study of (Ragab et al., 2020)who included patients with cataract to glaucoma, despite having older mean age (69.1 years old compared to 60.4 years old in the current study).

In present thesis the relationships among patients' age, disease history, and the changes in NEI-VFQ-25 scores before and after surgery, the correlation coefficient between age and the differences in NEI-VFQ-25 scores was 0.23, The data indicates a favorable association between patients' age and improvements in their NEI-VFQ25 scores, however the relationship is only slight. Although,

(Kien Gia To et al, reported that the finding of the adjusted multivariate GEE linear regression model, which examined the change in composite NEI VFQ-25 score following cataract surgery. After controlling for potential confounders, cataract surgery significantly

improved the VRQOL composite score by nearly 15 points ($p < 0.001$), In addition, those who underwent first and second eye cataract surgery reported a substantial improvement in VRQOL by roughly 4 points ($p < 0.001$) compared to those who had first eye surgery only. Binocular contrast sensitivity and stereopsis were substantially related with improved VRQOL following surgery, although visual acuity was not. VRQOL scores improved by nearly 13 points for each located with improvement in (VRQOL) after surgery, however, visunit improvement in contrast sensitivity (better eyesight) ($p < 0.001$). VRQOL scores deteriorated by approximately three points per log second increase in stereopsis (bad eyesight) ($p < 0.001$)(Kien Gia To, Lynn B. Meuleners, et al., 2014).

The study found that patients who underwent first and second eye cataract surgery experienced a significant improvement in their VQOL, with binocular contrast sensitivity and stereopsis being significantly related to this improvement. The study advocates for more accessible and efficient cataract surgical services.

Chapter Six: Conclusion, Recommendations and Limitations

6.1 Conclusion

In conclusion, this study has provided valuable information about change in VRQOL pre and after surgery in Palestine. The current study was conducted using a pretest-posttest design to comprehensively compare the vision-related quality of life VRQoL, Main results found that all subscales of NEI-VFQ-25 witnessed a significant improvement in overall and specific VRQoL, while pain was the only specific item with no significant improvement. Also, only the cause of cataract was the significantly related factor to the level of improvement (p-value = 0.036) as indicated by the differences between preoperative and postoperative scores. It is recommended to implement other specific factors in the comparison of pre-post VRQoL scores and include larger samples in future studies.

6.2 Recommendations of this Study

Based on the discussion of the current study results, the researcher recommends the following:

For Patients:

1. Educate about the benefits and safety of cataract surgery.
2. Provide information on the procedure, recovery, and expected outcomes.

For Healthcare Providers:

1. Enhance skills in the latest cataract surgery techniques.
2. Focus on patient-centered care, addressing individual patient needs.

3. Conduct further studies with larger sample sizes and including further factors.

For the Health Sector:

1. Invest in advanced surgical equipment and techniques.
2. Implement standard protocols for pre- and post-operative care.

Policy Recommendations:

1. Advocate for better insurance coverage for cataract surgery.
2. Develop national guidelines for cataract patient management.

Community Outreach and Public Health Initiatives:

1. Increase public awareness about cataracts and the importance of regular eye exams.
2. Implement community-based programs for early detection and intervention.

6.3 Limitation of the Study

The study may be limited by the following factors:

1- Small sample size (n = 58), which makes it less possible to generalize the findings on the overall population of cataract patients in Palestine.

2- The academic pressure that is added to the shortness of time frame. The data may have been larger, and the follow up to be longer and in multiple time points.

3- Limited resources like literature, the lack of funds spent on scientific research, and Transportation.

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Appendices

Annex (1): Letter Of Introduction To Participants In Survey Research, Consent Form And Survey Research.

الجامعة العربية الأمريكية
ARAB AMERICAN UNIVERSITY

استبيان بعنوان: جودة الحياة قبل وبعد الجراحة للمرضى الذين يخضعون لجراحة الساد

عزيزي/عزيزتي المشترك/ـة

نود أخذ الموافقة منك على المشاركة في الدراسة تحت عنوان: **"جودة الحياة قبل وبعد الجراحة للمرضى الذين يخضعون لجراحة الساد"**، وهي من ضمن استكمال مشروع التخرج في درجة الماجستير في تمريض العيون من الجامعة العربية الأمريكية – رام الله ، والتي تهدف إلى معرفة أهم الأسباب المصاحبة لمرض العين الزرقاء، كما ويهدف إلى التعرف على مستوى جودة الحياة لدى المرضى وأهم العوامل التي تؤثر عليه سلباً وإيجابيا، وكذلك التغير في مستوى جودة الحياة قبل عملية العين الزرقاء وبعدها بشهر.

نؤكد على سرية المعلومات المجموعة من حضرتك، وعدم مشاركتها مع أي طرف آخر، وأنها سوف تستخدم لغرض البحث العلمي فقط، كما ونؤكد على حرية انسحابك من المشاركة في البحث في أي وقت تشاء ودون الحاجة لإبداء السبب وراء ذلك.

مع الاحترام،،،

المشارك في الدراسة:

الممرضة: انغام قادوس

تحت إشراف: الدكتور جمال القدومي

التاريخ:_____

التوقيع: _____

الرقم: _____

الجزء الأول: المعلومات الديموغرافية

الرجاء اختيار واحدة من الإجابات التي تقابل كل سؤال من الآتية

السؤال	الخيارات	
1. العمر (بالسنوات)		
2. الجنس	1. ذكر	2. أنثى
3. مكان السكن	1. مدينة	2. بلدة
4. المستوى التعليمي	1. غير متعلم	2. دراسة ثانوية أو أقل
	3. دبلوم	4. بكالوريوس
	5. دراسات عليا	
5. الوضع الاقتصادي	1. سيء	2. معتدل
	3. جيد جدا	4. ممتاز
6. الحالة الاجتماعية	1. أعزب	2. متزوج
	3. مطلق	4. أرمل
7. العمل	1. القطاع الخاص	2. القطاع العام
	3. لا أعمل	
8. كم سنة تم تشخيصك بالمرض		
9. الاصابة بأي عين	1. اليمين	2. الشمال
	كلاهما	
10. ما هو سبب اصابتك بالمرض	1. خلقي	2. العمر
	3. سكري	4. الضغط
	5. ضغط العين	6. حادث او ضربة
	7. عمليات سابقة	8. لا اعلم

الجزء الثاني: الصحة العامة والإبصار

الرجاء الإجابة على الجمل التالية بواحدة من الخيارات المقابلة فقط

الجملة	الخيارات	
1- بشكل عام تعتبر أن صحتك	1. ممتازة	2. جيد جدا
	3. جيد	4. مقبولة
	5. ضعيفة	
2- في الوقت الحالي، هل تعتبر أن نظرك باستخدام كلتا العينين (مع وجود النظارات أو العدسات اللاصقة إن كنت ترتدي أحدهما)	1. ممتازة	2. جيد
	3. مقبول	4. ضعيف
	5. ضعيف جداً	6. اعمى تماماً
3- ما مقدار الوقت الذي تقضيه قلقاً على نظرك	1. لا أشعر بالقلق أبداً	2. قليلاً ما أشعر بالقلق
	3. بعد الوقت أشعر بالقلق	4. معظم الوقت أشعر بالقلق
	5. طول الوقت أشعر بالقلق	
4- ما هو كم الألم أو عدم الراحة الذي تحسه في عينيك أو حولهما (على سبيل المثال: الحرقان أو الحكة أو الوجع)؟ هل تصفه بأنه؟	1. لا يوجد	2. ألام بسيطة
	3. ألام متوسطة	4. ألام شديدة
	5. ألام شديدة جداً	

الجزء الثالث: الصعوبة في ممارسة الأنشطة

الأسئلة الأتية تدور حول الصعوبة التي تواجهها (إن وجد) حيث تقوم بعمل بعض النشاطات وأنت ترتدي نظارتك أو عدساتك اللاصقة (إن كنت ترتديها في العادة عند ممارسة ذلك النشاط).

الرجاء الإجابة على الجمل التالية بواحدة من الخيارات المقابلة لها فقط

(1 = لا تواجه صعوبة على الإطلاق ، 2 = تواجه صعوبة بسيطة ، 3 = تواجه صعوبة متوسطة ، 4 = تواجه صعوبة شديدة ، 5 = توقفت عن ذلك بسبب نظرك، 6 = توقفت عن ذلك لأسباب أخرى أو لعدم اهتمامك بذلك النشاط)

الجملة	1	2	3	4	5	6
5- ما مدى الصعوبة التي تواجهها عند قراءة الكتابة العادية في الجرائد						
6- ما مدى الصعوبة التي تواجهها عند قيامك بالأعمال أو الهوايات التي تتطلب منك النظر عن قرب، كالطبخ والخياطة وإصلاح الأشياء في المنزل واستعمال الأدوات اليدوية						
7- ما مدى الصعوبة التي تواجهها بسبب نظرك عند البحث عن شيء ما على رف مزدحم						
8- ما مدى الصعوبة التي تواجهها بسبب نظرك عند قراءة لافتات الشوارع أو أسماء المحلات التجارية						

9- ما مدى الصعوبة التي تواجهها بسبب نظرك عند قيامك بالنزول على السلالم أو الأرصفة في الضوء الخافت أو المساء						
10- ما مدى الصعوبة التي تواجهها بسبب نظرك في ملاحظة الأشياء التي على جانبي الطريق وأنت تسير						
11- ما مدى الصعوبة التي تواجهها بسبب نظرك في رؤية تعبيرات وجوه الأخرين وردود أفعالهم عندما تتحدث معهم						
12- ما مدى الصعوبة التي تواجهها بسبب نظرك في اختيار ومطابقة ملابسك						
13- ما مدى الصعوبة التي تواجهها بسبب نظرك في زيارة الناس في منازلهم أو في دور العبادة (المساجد أو الكنائس) أو في المطاعم						
14- ما مدى الصعوبة التي تواجهها بسبب نظرك في الخروج لمشاهدة الأفلام أو المسرحيات أو الأحداث الرياضية						

الجملة	الخيارات	
15- هل تقود حالياً سيارة، على الأقل بين الحين والأخر؟	1. نعم انتقل الى السؤال 15ج	2. لا انتقل الى السؤال 15أ
15أ- ألم تقد سيارة مطلقاً أم أنك تخليت عن القيادة؟	1. لم أقد مطلقاً انتقل الى الجزء الرابع، سؤال 17	2. تخليت عن القيادة انتقل الى السؤال 15ب
15ب- سبب التخلي عن القيادة هو:	1. النظر انتقل الى الجزء الرابع، السؤال 17	2. أسباب أخرى انتقل الى الجزء الرابع، السؤال 17
	3. النظر واسباب اخرى انتقل الى الجزء الرابع، السؤال 17	
15ج- في حالة القيادة حالياً: ما مدى الصعوبة التي تواجهها عند القيادة نهاراً في الأماكن المعتادة	1. لا تواجه صعوبة على الإطلاق	2. تواجه بعض الصعوبة
	3. تواجه صعوبة متوسطة	4. تواجه صعوبة بالغة

الرجاء الإجابة على الجمل التالية بواحدة من الخيارات المقابلة لها فقط

(1 = لا تواجه صعوبة على الإطلاق ، 2 = تواجه صعوبة بسيطة ، 3 = تواجه صعوبة متوسطة ، 4 = تواجه صعوبة شديدة ، 5 = توقفت عن ذلك بسبب نظرك، 6 = توقفت عن ذلك لأسباب أخرى أو لعدم اهتمامك بذلك النشاط)

الجملة	1	2	3	4	5	6

16- ما مدى الصعوبة التي تواجهها عند القيادة مساء						
16أ- ما مدى الصعوبة التي تواجهها عند القيادة في الظروف الصعبة كالجو السيء، وفي أوقات الذروة، وعلى الطريق السريع وفي ازدحام المدينة						

الجزء الرابع: أثار مشاكل الإبصار

الأسئلة القادمة تدور حول مدى تأثير إبصارك على أعمالك.

الرجاء الإجابة على الجمل التالية بواحدة من الخيارات المقابلة لها فقط

(1 = كل الوقت، 2 = معظم الوقت، 3 = بعض الوقت، 4 = قليلا من الوقت، 5 = لا يحدث ذلك أبداً)

الجملة	1	2	3	4	5
17- هل تنجز أقل مما ترغب في إنجازه بسبب نظرك؟					
18- هل يتسبب نظرك في تقييد قدرتك على العمل أو على فعل النشاطات الأخرى؟					
19- إلى أي مدى يتسبب الألم أو عدم الراحة في عينيك أو حولهما (على سبيل المثال الحرقان أو الحكة أو الوجع) في امتناعك عن عمل ما تود فعله؟					

الرجاء الإجابة على الجمل التالية بواحدة من الخيارات المقابلة لها فقط

(1 = صحيحة بالتأكيد، 2 = صحيحة غالباً، 3 = غير متأكد، 4 = خاطئة غالباً، 5 = خاطئة بالتأكيد)

الجملة	1	2	3	4	5
20- أظل بالمنزل معظم الوقت بسبب نظري					
21- أحس بأني محبط كثيراً بسبب نظري					
22- أجد صعوبة في السيطرة على ما أفعل من الأشياء بسبب نظري					
23- يتوجب على الاعتماد كثيرا جداً على ما يقوله لي الآخرون بسبب نظري					
24- أحتاج الكثير من المساعدة من الآخرين بسبب نظري					
25- أقلق كثيراً من فعل أشياء قد تحرجني أو تحرج الآخرين بسبب نظري					

Suggested Citation

Abdelfattah NS et al. “Development of an Arabic version of the National Eye Institute Visual Function Questionnaire as a tool to study eye diseases patients in Egypt”. International Journal of Ophthalmology 2014; 7 (5); 891-7

شكرا لك على المشاركة

Annex (2): Researcher Mission Facilitation Form.

State of Palestine **Ministry of Health** **General Directorate of Education in Health and Scientific Research**	دولة فلسطين وزارة الصحة **الإدارة العامة للتعليم الصحي والبحث العلمي**

Ref.: ………………
Date:………………

الرقم: عجج/٢٢٠٧/٢٠٢١
التاريخ: ٦/١٢/٢٠٢١

الأخ مدير عام الادارة العامة للمستشفيات المحترم،،،

تحية واحترام...

<u>الموضوع: تسهيل مهمة بحث</u>

يرجى التكرم بتسهيل مهمة الطالبة: **سعده فرح "محمد شريف" قادوس، ماجستير تمريض عيون– الجامعة العربية الامريكية**، لعمل بحث بعنوان:

جودة الحياة قبل وبعد الجراحة للمرضى الذين خضعوا لجراحة الساد

حيث ستقوم الطالبة بجمع معلومات من خلال تعبئة استبانة من المرضى (بعد أخذ موافقتهم)،

مع العلم أن مشرف الدراسة: د. ليانا اللبدي ود. جمال قدومي.

وذلك في: **مستشفى هوجو شافيز**

على ان يتم الالتزام بجميع تعليمات واجراءات الوقاية والسلامة الصادرة عن وزارة الصحة بخصوص جائحة كورونا، وتحت طائلة المسؤولية.

على ان يتم تزويد الوزارة بنسخة PDF من نتائج البحث، التعهد بعدم النشر.

مع الاحترام...

د. عبد الله القواسمي
مدير التعليم الصحي والبحث العلمي

نسخة: عميد كلية الدراسات العليا المحترم/ الجامعة العربية الامريكية

P.O .Box: 14 Telfax.:09-2333901	scientificresearch.dep@gmail.com	ص.ب. 14 تلفاكس: 09-2333901

الملخص

الخلفية: مصطلح جودة الحياة المرتبطة بالبصر (VRQoL) هو نتيجة حاسمة توجد في الأدبيات بين المرضى الذين يخضعون لجراحة الساد، ويتم تقييمها بعدة أدوات ووجد أنها تتأثر بعدة عوامل. الدراسة الحالية تهدف إلى التحقيق والمقارنة بين جودة الحياة المرتبطة بالبصر قبل وبعد العملية الجراحية بين مرضى الساد الفلسطينيين وأكثر العوامل المرتبطة بالتحسين.

المنهجية: نفذت الدراسة تصميم كمي قبل وبعد الاختبار، وشملت 58 مريضاً خضعوا لجراحة الساد في أربعة مستشفيات في فلسطين. تم استخدام أداة NEI-VFQ-25 الصالحة لتقييم جودة الحياة المرتبطة بالبصر، وتم تحليلها باستخدامSPSS ، مع الالتزام بالاعتبارات الأخلاقية للسرية والخصوصية.

النتيجة: كان متوسط عمر المرضى 60.4 عامًا، معظمهم مرتبطين بارتفاع ضغط الدم والسكري (15.5% لكل منهما). تحسنت متوسطات درجات NEI-VFQ-25 من 62.371 إلى 74.375 في الصحة العامة، 64.363 إلى 91.814 في صعوبة الأنشطة، 62.787 إلى 79.358 في الاستجابة لمشاكل الرؤية و66.121 إلى 86.014 في الدرجات الإجمالية) قيمة p 0.001 >في جميعها .كان التحسن أكبر بشكل ملحوظ في مرضى الساد الذين يعانون من ارتفاع الضغط داخل العين ومرضى ارتفاع ضغط الدم مقارنة بأسباب أخرى (قيمة p = 0.036)

الاستنتاج: جراحة الساد هي تدخل حاسم يحسن بشكل كبير جودة الحياة المرتبطة بالبصر في المرضى. تسلط الدراسة الضوء على أهمية العلاج الجراحي للساد وتشجع على توفير خدمات جراحية للساد أكثر إمكانية الوصول والكفاءة في المنطقة، وينبغي أن تركز الأبحاث المستقبلية على نتائج جودة الحياة المرتبطة بالبصر طويلة الأمد وتطوير برامج رعاية ما قبل وبعد العملية الجراحية.

الكلمات المفتاحية: الساد، جودة الحياة، جودة الحياة المرتبطة بالبصر، جراحة الساد، استبيان وظيفة البصر.