UNIVERSITY OF THE WESTERN CAPE

Faculty of Community and Health Sciences

RESEARCH MINI-THESIS

Title:	BEST PRACTICES ON OPERATIVE NURSING CARE IN OPHTHALMIC SURGERY FOR CATARACT AND RETINAL DETACHMENT IN SOUTH AFRICA: A SYSTEMATIC REVIEW
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Type of Thesis:	Mini-thesis
Degree:	MCur (Education)
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Date:	2 November 2012

Keywords: systematic review, pre-operative, post-operative, cataract, retinal detachment, counselling, health education, best practice, ophthalmology, prone

DECLARATION

I declare that 'Best practices on operative nursing care in ophthalmic surgery for cataract and retinal detachment in South Africa: A systematic review' is my own work, that it has not been submitted before for any examination in any other university, and that all sources I have used or quoted have been indicated by complete reference.

November 2012

Suveena Singh

Signed: _____

ACKNOWLEDGEMENTS

I would like to acknowledge the use of the Centre for Reviews and Dissemination Guide, the Critical Appraisal Skills Programme quality assurance tool and the Effective Public Health Practice Project quality assurance tool.

I would like to thank God for all the blessings, without which none of this would have been possible.

A very special and heartfelt thank you to my parents, Piya and Paaiyu who have supported and encouraged me in every imaginable way.

To Ms. Haaritha Boltman who has guided me through the methodology challenges and has encouraged me, thank you, and also for double checking my data analysis and quality assurance.

Thank you to all my friends who have formed a strong support system around me, kept me motivated and helped me to conquer all obstacles.

Thank you also to my supervisor for her guidance.

To both my corneal donor families whose gift has enabled me to have restored vision, to both my ophthalmologists who have motivated me throughout my studies and have instilled a passion for ophthalmology in me, thank you.

ABSTRACT

Title of thesis:

Best practices on operative nursing care in ophthalmic surgery for cataract and retinal detachment in South Africa: A systematic review

Background:

Literature shows that cataracts are the leading cause of blindness globally and nationally. Retinal detachment has also been a substantial problem both globally and nationally. Both of these conditions are prevalent in patients of 50 years and older. The treatment for both conditions is for surgery to be performed. In the Western Cape the three leading hospitals do not have ophthalmic pre-operative and post-operative protocols.

Review question:

What are the best practices to manage pre-operative and post-operative nursing care in patients waiting for cataract and retinal detachment surgery?

Objectives:

1. To determine the best practice in pre-operative and post-operative care in patients who have undergone cataract and/or retinal detachment surgery regarding: health education offered by nurses, counselling to prevent psychological effects, and positioning to prevent physical complications.

2. To develop a framework based on systematic reviews for pre-operative and post-operative ophthalmic nursing care in South Africa.

Methodology:

A systematic review using the guide by the Centre for Reviews and Dissemination was done, and studies were identified by searching various electronic databases and visually scanning reference lists from the relevant studies. Studies that were included were evidence-based. All study types were considered and the studies were selected based on the title and, where available, the abstract. These were then assessed against the inclusion criteria. A narrative synthesis was used. Finally the evidence was summarised and a framework was drawn up, focusing on pre-operative and post-operative nursing care for cataract and retinal detachment surgery.

Keywords:

systematic review, pre-operative, post-operative, cataract, retinal detachment, counselling, health education, best practice, ophthalmology, prone

LIST OF ACRONYMS

- CASP - Critical Appraisal Skills Programme
- CRD – Centre for Reviews and Dissemination
- EPHPP - Effective Public Health Practice Project
- HIV – Human Immunodeficiency Virus
- JBI - Joanna Briggs Institute
- JHU EPC - John Hopkins Evidence-based Practice Centre
- NIC- Nursing Interventions Classification
- NICE - National Institute for Health and Clinical Excellence
- NIHRHTA - National Institute for Health Research Health Technology Assessment Programme
- PICOS – Population, Intervention, Comparators, Outcomes and Study design

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CHAPTER 1: INTRODUCTION

1.1 INTRODUCTION

The leading cause of blindness globally is due to cataracts (Thylefors, Négrel, Pararajasegaram & Dadzie, (1995), in Thapa, Van De Berg, Khanal, Paudyal, Pandey, Maharjan, Twyana, Paudyal, Gurung, Ruit & Rens, 2011). Resnikoff, Pascolini, Etya'ale, Kocur, Pararajasegaram, Pokharel & Mariotti (2004) stated that 47,8% of the world's blindness is caused by cataracts. There were 11 478 people who were diagnosed with retinal detachments in England between 2002 and 2003, with 99% of the cases being hospitalised (Cure research.com, 2003). Looking at the global prevalence of blindness, more than 82% of all blind people are 50 years and older. The only treatment choice for cataracts is surgery with lens implantation, which is the most successful treatment in ophthalmology (Hashemi, Alipour, Fotouhi, Alaeddini, Rezvan, Mehravaran, Chams, Tari, Mansouri, Lashay & Malekmadani, 2010). In cases where the retinal detachment is symptomatic, surgical intervention is indicated (Sodhi, Leung, Do, Gower, Schein & Handa, 2008). Pre-operative care prepares the patient by providing information on what the surgery involves and helps to reduce anxiety. Cataract surgery is usually performed under local anaesthesia with the patient fully conscious, thus the patient should be pre-operatively calm and relaxed. Pearson, Richardson, Peels & Cairns (2004) found that patients didn't feel the information they received pre-operatively was adequate. Positioning of the patient is vital to speed the recovery process following retinal detachment surgery (Woodcock, Shah & Smith, 2004).

In South Africa 66% of blindness is caused by cataracts, that is approximately 170 000 people, according to The Fred Harrows Foundation (2010). The Eastern Cape requires an average of 17 500 procedures per year to meet the goals of the World Health Organisation (WHO), 2 000 to 3 000 cataract operations per million people every year by the year 2020. The Eastern Cape's government hospitals perform up to 3 000 operations per year. This shows the need for more ophthalmic care and surgery (Erasmus, 2009). According to the Department of Health Directorate (2002) of South Africa, retinal detachment fell into the category of other causes of

blindness accounting for 20% of blindness in the country. In the Western Cape there are three leading hospitals, one of which is a specialised hospital concentrating only on ophthalmology, the Cape Eye Hospital; the other two are academic hospitals with fairly large ophthalmology units comprising of in-patient and out-patient clinics. In 2010 the ophthalmic out-patients department at Tygerberg Hospital consulted with 25 327 patients, making this the busiest surgical clinic in the hospital. Approximately 900 cataract surgeries were performed, due to more emergency and more complicated cases being attended to as well. The Cape Eye Hospital performed 4 860 cataract removal surgeries and approximately 312 retinal detachment repair surgeries in 2010.

Although evidence shows that there are a large amount of ophthalmic surgeries being done, there are no existing nursing protocols in the Western Cape to manage pre-operative and post-operative care in ophthalmology. Groote Schuur Academic Hospital, Tygerberg Academic Hospital and Cape Eye Hospital were contacted to establish whether they had post-operative protocols; unfortunately all three of these specialised hospitals do not have any of these protocols. The nurses at these institutions use a general pre-operative and post-operative care. South African literature was not able to provide any pre-operative and post-operative ophthalmic protocols. Retina South Africa and the South African National Council for the blind were also not aware of any protocols being in place. The reasoning for focusing on the above conditions was to ensure that both the anterior and posterior segment of the eye can be incorporated, with cataract surgery for the anterior segment and retinal detachment for the posterior segment.

1.2 PROBLEM STATEMENT

In South Africa, cataracts and retinal detachment contribute to the majority of the causes of blindness. Approximately 66% of blindness is due to cataracts i.e. approximately 170 000 people. Retinal detachment falls into the category of other causes of blindness accounting for 20% of blindness in the country, with 312 retinal detachment repair surgeries performed in 2010 at the Cape Eye Hospital. Both these conditions require surgery as the solution. Pre-operative and post-operative care is vital to prevent complications such as intra-operative complications, infections, delays in the recovery process, various complications leading to a loss of sight and

psychological impacts. There were no pre-operative and post-operative care guidelines or protocols located to treat ophthalmic surgery patients in the Western Cape. This was of concern in regard to evidence-based care in this new era. Nurses are required to practise care based on evidence and best practices. This review sought to identify previous evidence in order to formulate a pre-operative and post-operative nursing care framework for best practices for patients who have undergone cataract and retinal detachment surgery.

Review question: What are the best global practices to manage pre-operative and post-operative nursing care in patients who have undergone cataract and retinal detachment surgery?

1.3 AIM AND OBJECTIVES

Aim:

The aim was to develop a framework on best practices on the pre-operative and post-operative nursing care in patients undergoing ophthalmic surgery for cataracts and retinal detachment.

Objectives:

The objectives of the study were:

1.3.1 To determine the best practice in pre-operative and post-operative care in patients who have undergone cataract and/or retinal detachment surgery in regard to:

a. Health education offered by nurses
b. Counselling to prevent psychological effects
c. Positioning to prevent physical complications

1.3.2 To develop a framework based on systematic reviews for pre-operative and post-operative ophthalmic nursing care in South Africa.

1.4 SIGNIFICANCE OF THE REVIEW

Evidence-based care is important in nursing as the care is based on scientific methods and implies that the care rendered should be of a high standard. By drawing up this framework,

nursing staff have a universal evidence-based ophthalmic framework to apply regarding positioning, health education and counselling.

1.5 RESEARCH STATEMENT

The literature search as well as physical evidence did not reveal any pre-operative or post-operative protocols for cataract and retinal detachment surgery, making a review necessary.

1.6 METHODOLOGY

A systematic review was the chosen methodology for this review. The methodology was carried out according to the Centre for Reviews and Dissemination's guidance for undertaking reviews in health care. The Centre for Reviews and Dissemination (CRD) is a research body which works on the systematic review methodology.

1.7 ETHICAL CONSIDERATIONS

Traditionally, systematic reviews often deal with documents and not with human participants. This review adopted the Centre for Reviews and Dissemination (CRD, 2009) guidance on how to conduct the reviews and this entails dissemination of the final product. The final step in systematic review is to involve other experts to disseminate the framework. Permission was requested from the University of the Western Cape Ethics Committee to conduct the review. Appendix 5 shows the ethical clearance letter.

1.8 CHAPTER OUTLINE

Chapter One provides an introduction to the review. The available literature is reviewed in Chapter Two. Chapter Three discusses the methodology of this systematic review, with the results being incorporated into Chapter Four. Chapter Five comprises of the implications for

further research, the nursing care framework that has been formulated and the limitations of further research.

1.9 GLOSSARY

1.9.1. Pre-operative: pertaining to period before a surgical procedure (*Mosby's Medical, Nursing, & Allied Health* Dictionary, 2002)

1.9.2. Pre-operative care: the preparation and management of the patient before surgery (*Mosby's Medical, Nursing, & Allied Health* Dictionary, 2002)

1.9.3. Post-operative: pertaining to period after surgery (*Mosby's Medical, Nursing, & Allied Health* Dictionary, 2002)

1.9.4. Post-operative care: the management of the patient after surgery (*Mosby's Medical, Nursing, & Allied Health* Dictionary, 2002)

1.9.5. Cataract: an abnormal progressive condition of the lens of the eye, characterised by loss of transparency. A grey-white opacity can be observed within the lens, behind the pupil. Most cataracts are caused by degenerative changes, often occurring after 50 years of age (*Mosby's Medical, Nursing, & Allied Health* Dictionary, 2002)

1.9.6. Retinal detachment: a separation of the retina from the retinal pigment epithelium in the back of the eye. It usually results from a hole or tear in the retina that allows vitreous humor to leak between the choroid and the retina (*Mosby's Medical, Nursing, & Allied Health* Dictionary, 2002)

1.9.7. Counselling: the act of providing advice and guidance to a patient or his or her family. OR a nursing intervention from the Nursing Interventions Classification (NIC) defined as use of an interactive helping process focusing on the needs, problems, or feelings of the patient and significant others to enhance or support coping, problem-solving, and interpersonal relationships (*Mosby's Medical, Nursing, & Allied Health* Dictionary, 2002)

1.9.8. Health education: an educational programme directed to the general public that attempts to improve, maintain, and safeguard the health of the community. OR a nursing intervention from the Nursing Interventions Classification (NIC) defined as developing and providing instruction and learning experience to facilitate voluntary

adaption of behaviour conducive to health in individuals, families, groups or communities (*Mosby's Medical, Nursing, & Allied Health* Dictionary, 2002)

1.9.9. Ophthalmology: the branch of medicine concerned with study of the physiology, anatomy and pathology of the eye and the diagnosis and treatment of disorders of the eye (*Mosby's Medical, Nursing, & Allied Health* Dictionary, 2002)

1.9.10. Prone: Lying with the front or face downward (*Mosby's Medical, Nursing, & Allied Health* Dictionary, 2002).

1.9.11. Framework: The way in which a thing is put together, structure or system (*Mosby's Medical, Nursing, & Allied Health* Dictionary, 2002).

1.10 CONCLUSION

This chapter provided a brief introduction to the topic of review and defined some of the terms used in this review. The background was provided to recognise the problem statement and motivate for this review. The aim was to develop a framework on best practices on the pre-operative and post-operative nursing care in patients undergoing ophthalmic surgery for cataracts and retinal detachment. The following chapter looks at the available literature on this topic.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

The previous chapter provided a background for this review. In this chapter literature that was reviewed looked at the global and national ophthalmic statistics, previous studies regarding pre-operative counselling and post-operative health education, the use of best practices, the positioning of the patient after retinal detachment surgery, health education and, finally, counselling regarding cataract and retinal detachment surgery.

2.2 GLOBAL AND LOCAL STATISTICS OF OPHTHALMOLOGY

This section establishes global and local ophthalmic statistics to see whether eye care has a similar impact in South Africa compared to the rest of the world.

According to Resnikoff et al (2004) there were approximately 37 million blind people globally in the year 2002, with 124 million people having poor vision. More than 82% of all blind people are 50 years old and older. Watkinson (2009) considered the effect that the visually impaired elderly have on the health service in the United Kingdom. It was found that the health service spent £20 billion annually on long term and residential care and nursing homes to support older people with visual impairment, with £1,7 billion being spent on treatment of hip fractures annually, predominantly in elderly people whose diminished vision has been an influential factor. A misconception exists that sight is less important in the elderly and that the consequence of the vision loss should simply be considered part of the aging process. The elderly are still an important part of society, especially since they have a wealth of knowledge and experience. Looking at the global statistics, cataracts are the cause of 41,8% of blindness (Thapa et al, 2011). If cataracts are diagnosed early enough, they can be treated to prevent blindness, so that the patient can lead the best quality life. Similarly, cataracts are the leading cause of blindness in South Africa, which is responsible for approximately 50% of blindness, according to Lecuona & Cook (2011). This is of concern as blindness from cataracts is preventable. At the Cape Society

of Ophthalmic Nurses Conference (2012), the need for basic visual screening was made a concern; small community projects that were carried out identified that in the more outlying districts of the Western Cape in South Africa, communities simply needed basic visual testing and a pair of reading glasses. This was a concern as the members of the communities requiring basic reading glasses were from all age groups, showing that there is a vast need for basic ophthalmic care.

Recently there has been an increased incidence of the early onset of Type 2 diabetes among South Africans. This predisposes the nation to eye problems, especially cataract and retinal detachment. This is further worsened by the limited health knowledge of patients, as they are not aware of the signs and symptoms of diabetes, resulting in them being diagnosed at acute stages. Although there are various campaigns informing the public about the signs and symptoms of diabetes, there is still a lack of knowledge amongst the nation. The lack of knowledge between the elderly could possibly be due to them being uneducated. Even though Type 2 diabetes is common in adults, children also run the risk of developing this condition due to lifestyle problems such as obesity and a general lack of physical activity. The untreated diabetes further increases these patients' risk of cataract and retinal problems. In South Africa, surgery is expensive and there are long waiting lists for surgery due to the low socio-economic state and the limited number of ophthalmic surgeons and facilities in the country. (Cape Society of Ophthalmic Nurses Conference, 2012)

In the Western Cape Province of South Africa, ophthalmic surgery is mainly done at the bigger hospitals, which implies that patients have to travel long distances to bigger city centres to access surgical care. This implies that a large number of patients have to spend money on travel to the hospitals. Taking into account that most of the cataract and retinal detachment patients are elderly, this becomes of concern. Due to the impact of the Human Immunodeficiency Virus (HIV) in South Africa, a large number of the elderly have become primary caregivers to their grandchildren; they have financial and social responsibilities to their families. This becomes a concern for them when they need to travel to access ophthalmic care, as they consider what they could rather use the money for or the time implications of travel and surgery. In 2010 the ophthalmic out-patients department at Tygerberg Hospital consulted with 25 327 patients, making this the busiest surgical clinic in the hospital. Approximately 900 cataract surgeries were

performed in 2010 at Tygerberg Hospital due to more emergency and more complicated cases being attended to. (Esbach, D. P., personal communication, 2011) This hospital is a tertiary level hospital, implying that more complicated cases are examined at the facility. The Cape Eye Hospital is a private specialised hospital in the Northern suburbs of Cape Town. At this facility about 4 860 cataract surgeries and approximately 312 retinal detachment operations were performed in 2010. (Wagenaar, L., personal communication, 2011) This shows that ophthalmic surgery is a leading surgical field.

The World Health Organisation (WHO) has set out a goal of between 2 000 and 3 000 cataract surgeries per million people by the year 2020, implying that the number of cataract surgeries in South Africa needs to increase rapidly. In the Eastern Cape there was an estimate of 7 million people living there, implying that there should have been an average of 17 500 cataract surgeries per year to meet this population target. Approximately 3 000 cataract surgeries were being performed per annum in the Eastern Cape, showing that there is a huge backlog (Erasmus, 2009).

Between April 2011 and March 2012, 6 831 cataract surgeries were performed in the Western Cape, with 5122 cataract surgeries being performed in the Cape Metro region (SINJANI, 2012).

When looking at the cataract surgical rate of The Cape Eye Hospital in 2010 and the surgical rate in the Cape Metro region in 2012, there has not been a vast increase in the number of surgeries performed.

The above literature shows the impact that ophthalmic care has on the population. With the limited resources for pre-operative and post-operative ophthalmic nursing care in the Western Cape, patients are further disadvantaged. This further motivates for an evidence-based protocol that will facilitate the recovery process of the patient and get the patient back to daily activities in the quickest timeframe.

2.3 PREVIOUS STUDIES: PRE-OPERATIVE AND POST-OPERATIVE COUNSELLING AND CARE

Any surgery requires pre-operative and post-operative care to be rendered to the patient. Pre-operative care is the care rendered before the surgery, while post-operative care is care rendered following surgery.

Law (2007) published the effects of posturing on two groups of patients recovering from retinal detachment surgery, focussing on the recovery process and positioning of the patients. The focus was on patients who underwent vitrectomy as the chosen method of retinal detachment surgery. The surgeons used either gas or a heavy liquid to repair the retinal detachment. The result of the study showed that patients needed more pre- and post-operative counselling, health education and support.

Allen, Knight, Falk & Strang (1992) looked at the effectiveness of a pre-operative teaching programme for cataract patients. The patients were taught, using various teaching aids and pamphlets concerning the surgery, and follow-up care was also discussed with and given to each patient. This study noted that by adding behavioural information concerning the approaches, the patient could assist in the post-operative process, and sensory information, especially about what the patient would feel after the surgery, would impact positively on the patients' post-operative recovery. Patients need to understand what cataracts are, the surgical procedure and the recovery process, for the best experience. Allen et al (1992) identified previous studies where patients felt that advanced knowledge on homecare, the presence of a family member at the information session, large font printouts for further reference and the chance to discuss their concerns, facilitated recovery. It emerged that older patients over the age of 75 years in the study benefited most from the pre-operative education, whether the teaching happened at the patient's home or in the hospital.

Kirkwood, Pesudovs, Latimer & Coster (2006) showed the effectiveness of using pre-operative and post-operative care in patient with cataracts. This study was conducted over an 18 month period with 185 patients being assessed. The patient waiting time for surgery was considerably reduced with the nurse-led clinic, from a mean of 115 days at the beginning of the study to a mean of 21 days by the end of the study. The understanding behind the reduction in waiting

times is that patients who did not require surgery were assessed and referred appropriately. Nurse-led clinics are also cost effective, especially when looking at the training required and salary of the ophthalmic nurse practitioner compared to the ophthalmologist. The patients in the study were generally very satisfied with the care, service, visual outcome and surgical waiting times. No dissatisfaction was expressed by any of the patients. The results showed that a nurse-led cataract clinic can function safely and competently, leading to good visual acuity and satisfied patients. The nurse-led clinics improved access to care for patients and was commended to be implemented in other ophthalmic departments.

Due to advances in medical techniques and anaesthesia, patient safety and the effectiveness of the surgical process have increased. The cost of surgery has also decreased due to the shortened stay in hospital and because cataract surgery is more regularly being done on a day care basis. According to OECD (2010), cataract surgery is a high volume surgery carried out mostly on a day care basis in most European countries, which has become the most frequent surgical procedure in many European countries. As this procedure becomes more day-surgery based, a greater emphasis is put on post-operative care, adding a greater responsibility onto the ophthalmologist and the nursing staff, as more patient education needs to be enforced (OECD, 2010).

Watkinson (2009) reiterates that verbal and written information should be presented to patients and their family to increase their knowledge, the proposed surgical procedure and the importance of obeying the prescribed post-operative eye medications.

Pearson et al (2004) performed a systematic review, looking at the care of patients while in a day surgery unit. It was found that patients felt that they had received insufficient information preceding surgery and that the information they did receive did not meet their needs relating to what to expect from the surgery, the admission and post-operative care, especially concerning their discharge. It was found that information regarding day surgery and the specific ophthalmic surgery should be given, especially concerning post-operative pain and discomfort. In the post-operative section of the review Pearson et al (2004) noted that patients were not confident about being discharged and that they experienced anxiety about taking care of themselves at home following discharge, as the information given about self-care at home was lacking. Since discharge was an important concern to the patient, written material about personal hygiene, pain

relief and management, and the details of a contact person should be provided to help the patients feel more confident about caring for themselves. In order for quality pre-operative and post-operative care to be rendered, a framework should be developed.

2.4 BEST PRACTICES: USE OF CLINICAL CARE PROTOCOLS

There has recently been much outcry into evidence-based care. Therefore this section looks at what evidence-based practice and best practice is, and how these will influence the care rendered to the ophthalmic patient.

Evidence-based practice is the integration of the best research evidence with clinical practice and patient values (Sackett, Straus, Richardson, Rosenberg & Haynes [2000], in Spector, [2002]). As Spector so excellently explains, evidence-based practice is extremely rigorous, as all the research that has been performed in an area is selected. The research results are then analysed and synthesised to devise a thorough review. Usually a systematic review method is used as this method is meticulous in design. Thereafter the results are put into the perspective of clinical expertise, the value system of the patient and best practices are developed. Evidence-based nursing also reduces the differences in nursing care and aids the nurse with proficient and valuable decision-making skills. Driever (2002) summarises best practice as linking research with policy to achieve the primary objective of improving health through providing effective and cost-effective health care, which is consistent with the nursing approach to use research methods and discoveries to improve practice.

So, in essence, evidence-based care leads to best practice, as evidence-based care lays the research-based foundation for best practice which is the day-to-day practice to deliver the best possible nursing care to the patient. The whole aim of this study will result in best practice being taken into account so that a framework will be produced, leading to nursing staff having a universal evidence-based ophthalmic framework to apply with regards to positioning, health education and counselling.

A protocol describes standardised steps to a formal procedure which will be used in care management. By having protocols, clinical care is standardised, resulting in nurses having an

exact protocol to follow that will ensure that quality care will be rendered. Kirkwood et al (2006) looked at the efficacy of a nurse-led pre-operative cataract assessment and post-operative care clinic. Kirkwood et al (2006) drew up specific protocols concerning pre-operative assessment, post-operative assessment and quality assurance mechanisms. These protocols enabled the method of the study to be standardised and also provided a guide for the nursing staff. The results of the study found that, with specialised training and suitable protocols, ophthalmic nurses can influence the management of cataracts.

- **WHY BEST PRACTICES?**

Pearson et al (2004) reviewed what constitutes best practice in terms of the effectiveness of care given to patients undergoing day surgery. Although the systematic review included various types of surgical procedures including ophthalmic surgery, the knowledge produced is still applicable to this study. The review analysed studies which had the following interventions: admission; pre-operative care; post-operative care incorporating observations, pain control and the management of nausea and vomiting; the preparation and protocol for discharge; and the post-operative follow-up of the patient.

Best practice in nursing involves the most suitable way to render care, resulting in a decrease in possible complications. By using these best practices, the quality of care rendered to the patient will be of a high standard. Ultimately best practice is based on scientific knowledge and incorporates daily care, resulting in the best possible care being carried out.

- **DAY SURGERIES' NEED FOR POST-OPERATIVE CARE**

Cataract surgery is more regularly being done on a day care basis, due to advances in medical techniques and anaesthetics. These advances have improved effectiveness and, most importantly, patient safety, and they have reduced the patients' stay in hospital, leading to a reduction in cost. As this procedure becomes more day surgery based, a greater emphasis is put onto post-operative

care, adding a greater impact on the ophthalmologist and the nursing staff, as more patient education needs to be enforced (OECD, 2010).

- **POSITIONING OF THE PATIENT AFTER RETINAL DETACHMENT SURGERY**

Literature shows that prone positioning is favourable in retinal detachment surgery and macular hole repairs. Positioning of the patient following retinal surgery depends on the type of gas or substance used by the ophthalmologist. The reasoning behind positioning of the patient is so that the repair substance applies pressure to the affected area, causing the retina to re-attach. The buoyant force of the repair substance is maximal at the apex of the bubble, depending on gravity and the depth of the repair product, which is why the post-operative position after retinal detachment is so important. The buoyancy force can move the sub-retinal fluid to re-attach the retina (Guillaubey, Malvitte, Lafontaine, Jay, Hubert, Bron, Berrod & Creuzot-Garcher, 2008). If the retina does not re-attach, surgery would be repeated, or the patient may have significant loss of central vision. Generally the longer the retina is detached, the larger the probability of loss of vision after re-attachment of the retina so, for this reason, the retina should be promptly surgically attached. If a gas bubble has been used in the surgery, the patients head needs to be positioned, so that the bubble places pressure on the area where the detachment occurred. Once the retina has re-attached, positioning is usually stopped. Even if the ideal position is not possible, the patient's head can often be turned to the side to obtain some benefit (Michels, Wilkinson & Rice, 1990).

In a study by Tranos, Peter, Nath, Singh, Dimitrakos, Charteris & Kon (2007) on macular hole surgery without prone positioning, two groups of patient were investigated. Patients from Moorfields Eye Hospital in England were assigned to the posturing group and were instructed to adopt ten days of face-down positioning, while patients from Worthing Hospital in England were assigned to the non-posturing group ofpatients and were told to carry on as normal without taking any particular position but they should avoid lying supine for ten days. This was done to minimise the disruption of macular hole surgery to their daily routine, which is currently one of the main limitations of conventional surgery. It was shown that macular hole surgery without

prone posturing causes similar closure rates to conventional surgery with strict early post-operative posturing.

Law (2007) explored the effects of positioning on two groups of patients following retinal detachment surgery. Patients who underwent vitrectomy as the chosen method of surgery were focused on. The surgeons used either gas or a heavy liquid to repair the retinal detachment. The patients reported twice a day for two weeks on the factors influencing their recovery and the effects of posturing on their daily life. The main findings suggested that both groups experienced problems with sleep, pain, mood, energy level and limitations of their daily activities. Unfortunately only an abstract could be accessed, so there is no information on the exact positioning of the patients.

Li, Wang, Tang & Zhao (2009) used two surgical methods to treat retinal detachment due to macular holes, with both methods requiring face-down positioning post-operatively. Patients who underwent surgery with gas injection were instructed to maintain a face-down position for 10 to 14 days, while patients who underwent surgery with pars plana vitrectomy with a gas-fluid exchange were instructed to maintain a face-down position for three weeks post-operatively.

The evidence above implies that positioning after retinal detachment surgery is important regardless of the timeframe and that positioning should be incorporated in a post-operative protocol.

- **HEALTH EDUCATION**

Health education is the information that the patient receives before discharge. This information usually details what aspects of care need to be rendered at home to the patient concerning medication, health promotion and care of the affected area. Health education is important as it teaches patients how to care for themselves at home; this is of utmost importance as the patients should be able to be self-reliant. This self-reliance also helps the patients to feel more in control of their health, which in turn boosts self-confidence. Once the patients are discharged, they will have to administer their medication themselves so they need to be informed about the route and frequency of administration of the medication. The health promotion segment encourages the

patients to lead a healthy lifestyle. By having a population of healthy individuals, there will be a reduction of pressure on the health system. Individuals will be screened at earlier stages for lifestyle conditions such as hypertension and diabetes, which in turn will result in these individuals receiving care before the condition becomes extremely acute, while reducing the number of individuals admitted into tertiary level health care. Following surgery, the operated site needs to be cared for, to prevent infection and injury. In the context of this review, health education surrounding ophthalmic surgery will be focussed on. (Hardy, 2009)

Watkinson (2009), while discussing the nurses' role, highlighted the important aspects of demonstration of how to instill eye drops, the significance of hand washing before and after the instillation, and how to prevent an eye infection. The patients need to wash their hands before and after performing most care techniques. Similarly, clean hands are essential to prevent infection in the operated eye. The eye drop should be instilled into the medial corner of the eye, the lower conjunctival sac, for fast absorption. It is usually easier if the patient looks up and pulls down the lower eyelid when instilling the drops so that the conjunctival sac is easily exposed. When the patient is administering the eye drops, the tip of the eye drop container should not touch the eye and surrounding structure, as this could provide a point for contamination into the remainder of the drops in the container, resulting in a cross infection. Following surgery, the patient should be advised to observe the eyes daily for signs of excessive redness, swelling or stickiness, all of which indicate the presence of an infection. Pain around the eye, or sudden reduced vision, requires that the patient immediately contact the hospital or ophthalmologist.

Jones, Cavallerano, Morgan, Semes, Sherman, Robert Vandervort & Wooldridge (1995) spoke about the importance of health education regarding the warning signs of retinal detachment, advising the patient to immediately seek ophthalmic care. Prompt identification of the warning signs will increase the chances of a positive surgical outcome and improve the post-operative visual acuity. The warning signs of retinal detachment comprise of floaters in the visual field, flashing lights, a curtain over the visual field and a sudden loss of vision in a specific area in the eye. The patient then needs to be seen immediately by an ophthalmologist who will evaluate the extent of the detachment. Surgery is usually indicated and performed as soon as possible due to the prognosis worsening during the days following detachment. Jones et al's (1995) article also mentions the importance of regular post-operative follow ups with both the ophthalmologist and

optometrist. This is so that the eye can be monitored, but also so that vision can be restored to the patient.

Hardy (2009) mentioned health education relating to the operated eye feeling itchy following surgery and how to avoid accidental rubbing of the affected eye and the avoidance of prolonged bending for several weeks, as this causes an increase in ocular pressure. There was also reference made to the importance of correct instillation of eye drops. Following ophthalmic surgery, it is important that the patient does not rub the operated eye, as this could result in ocular injury. Instead of rubbing the eye, the patient should rather blink, as this action helps to secrete tears which help to lubricate the eye. Usually the eye becomes itchy as it is dry, so the tears effectively help with lubrication. In practice, patients usually receive an eye shield following cataract surgery to use at night while they sleep, to prevent accidental injury. The reasoning behind the avoidance of prolonged bending following cataract surgery is so that the ocular pressure does not increase; if the pressure increases to very high readings, the patient may lose vision and suffer permanent damage to the eye.

- **COUNSELLING**

This process usually involves explaining to the patient their condition and the treatment process that is to follow. Counselling takes place before the surgical procedure. During the ophthalmic counselling process, the patient is prepared for the surgery and what to expect following surgery. Many of the post-operative arrangements are made in the counselling stage, as the patient will have impaired vision and thus may need help with transportation and some daily activities.

Hardy (2009) mentioned important aspects in pre-operative counselling, such as explanation of the procedure to reduce anxiety, making sure that the patient will be able to continue with the surgery, discussion on local anaesthetic, establishing the patient's social circumstances since the avoidance of heavy work will be required, and post-operative transport. Local anaesthetic is the usual choice of anaesthetic used in cataract surgery, so the patient needs to understand that they will be awake during the procedure. This may cause anxiety, so the nurse would need to calm and reassure the patient. The patient would need to be reassured that the eye will not be taken out

of the eye socket and that they will not really be able to see while being operated on but will rather see a shadow. The eye will be kept open by eye clamps which will prevent the patient from blinking and also hurting themselves during the surgical process. The patient would be on medical leave following the surgery, thus this need to be discussed with the patient beforehand so that they can make the necessary arrangements.

Another important aspect would be to discuss the complications of surgery with the patient; just like any other procedure, ophthalmic surgery also has risks. The patient needs to be informed of all possible risks so that he or she can make an informed decision as to whether to continue with the surgery.

The main risks of cataract surgery are as follows, accoding to Hardy (2009):

- → Endophthalmitis is an infection of the eye that can lead to blindness. The symptoms are pain and deteriorating vision and usually occur four to five days after surgery. Urgent treatment with various types of antibiotics is required.
- → Increased intraocular pressure may occur in the days following surgery. The patient may suffer severe headache, eye pain, nausea and vomiting, which should be reported promptly. Increased intraocular pressure can be treated with medication.
- → Cystoid macular oedema occurs when fluid accumulates at the back of the eye. Eye drops are used to resolve this problem, but the patient's vision is temporarily reduced.
- → Retinal detachment is caused by the retina separating from the back of the eye. The patient may notice floating marks or flashing lights, progressing to a shadow across their vision. Retinal detachment is treated with prompt surgery as the prognosis worsens during the days following detachment.

Allen et al's (1992) study found that pre-operative teaching helped the cataract surgery patients to be more physically and psychologically prepared. By being more prepared and informed, the patient is able to recover faster following the surgery. The content of the teaching programme referred to information conveyed to patients that would assist them in adopting positive post-operative behaviours. During the pre-operative counselling stage, the nurse and patient also discuss the care and procedure to be rendered in the post-operative phase.

Pritchard (2009) discussed the respective physiological and psychological effects that anxiety has on the body, on a physiological level by altering the patient's vital signs and patient on a psychological level by triggering cognitive and behavioral changes. The changes in vital signs may cause a problem during and after the surgery – if the vital signs are out of the normal parameters, the patient may have to be kept in hospital to be monitored, which will result in the patient spending longer than initially anticipated, which in turn could cause the patient to become more anxious. The level of anxiety which the patient experiences can influence their response to the anaesthetic and then analgesia. It may also increase pain, trigger depression, nausea and fatigue, and impede healing, which can hamper the patient's discharge from hospital. Pritchard (2009) found that individualised and patient-centred nursing approaches to reduce anxiety are significant. It is important that the patient be able to interact with the nurse as this opens a line for open and effective communication. The philosopher John Dewey was renowned for his beliefs in experiential learning, by believing that people learn best from experiences, thus, by the patients being able to have open conversations with the nurse, they will be able to gain the best possible knowledge.

2.5 CONCLUSION

Literature shows the necessity for pre-operative and post-operative care in all types of surgery and draws attention to gaps in pre-operative and post-operative ophthalmic care. There is not enough counselling or health education being given. This literature review identified studies which are evidence-based and identified some studies showing that nurses need to bridge the gaps in ophthalmic care. The reasoning behind why evidence-based practices should be used to draw up best practice guidelines was discussed in this section.

All the above literature provides strong arguments as to why counselling, health education and positioning following retinal detachment should be incorporated into a pre-operative and post-operative framework. This review has tried to close any gaps with a pre-operative and post-operative nursing care framework on best practices, to encompass the above concerns. The following chapter discusses the various review methods and the methods that are used to carry out this review.

CHAPTER 3: METHODOLOGY

3.1 INTRODUCTION

This chapter discusses systematic reviews, the major types of systematic reviews and the rationale behind the method for this review. The systematic review method is then applied to this review.

Health care determinants for each patient and the national public policy should be based on the best existing research. Health care providers and policy makers are encouraged to use all the available research and information regarding best practice to ensure that policies have a good research and evidence basis. Systematic reviews focus on identifying, evaluating and summarising the results of studies, so that all present knowledge are accessible to the health care provider and decision makers. By correlating the results of various studies, the evidence becomes more reliable and precise compared to looking at one study alone. Systematic reviews follow a strict scientific design which is based on clear, pre-specified and reproducible techniques. Besides identifying knowledge in a particular field, a lack of knowledge can also be identified. Systematic reviews are used to gather and evaluate all studies that deal with related information. Systematic reviews are able to strengthen the link between effective evidence and clinical practice. This is especially important since evidence-based practice influences best practice, as was discussed in the literature review section of this review. This methodology is furthermore often used to advise medical decision-making, establish clinical guidelines and to plan future research studies (Egger, Smith & Altman, 2003); (CRD, 2009).

3.2 TYPES OF REVIEWS

There are four major methods to a systematic review.

a. John Hopkins Evidence-based Practice Centre (JHU EPC) – this method uses interdisciplinary teams that incorporate clinical expertise with expertise in evidence-

based methods, including meta-analysis, decision, benefit-harms, and cost effectiveness analysis. (Johns Hopkins Bloomberg school of Public Health, n.d.)

b. Joanna Briggs Institute (JBI) has developed theories, methodologies and rigorous processes for the critical appraisal and synthesis of evidence in order to help in clinical decision-making in health care. These processes relate to the synthesis of quantitative and qualitative evidence, the results of economic analyses and expert opinion and text. JBI systematic reviews starts with the development of a proposal which is peer reviewed and approved by the Institute. A rigorous and extensive search of the literature on the topic is undertaken, which is then assessed for its applicability to the topic and appraised using standardised tools to ensure that only high quality research is included. Two trained JBI reviewers complete this process and, where disagreements occur, a third reviewer is consulted. Once this process is complete, the results are combined and published in a report. Since 2001, JBI has conducted stand-alone qualitative systematic reviews with a defined method and supporting software (Lockwood, n.d.) (The Joanna Briggs Institute, 2012).

c. Cochrane systematic review is a scientific investigation with a pre-planned methods section and a compilation of original studies that are predominantly randomised controlled trials and clinical controlled trials, but also sometimes non-randomised observational studies. The results of these various primary studies are synthesised by using methods that limit bias and accidental error. Primary studies' research designs and study characteristics are evaluated, data synthesised, and the results are interpreted. This method focuses on quantitative studies, they are working on defining the methodology and guidance for the review of qualitative studies, but there is no supporting software (Lockwood, n.d.) (The Cochrane Collaboration**,** 2012).

d. The Centre for Reviews and Dissemination (CRD) guide was written for researchers with knowledge of health research but who are unfamiliar to systematic reviews and for those with some experience but who want to learn more. This method was adapted from the Cochrane method, and the guide does make reference occasionally to the Cochrane method. The CRD's systematic review guide was updated in 2006, to include qualitative data to be integrated alongside a quantitative review, assisting in explanation, interpretation or implementation of quantitative findings. (Lockwood, n.d.)

The Joanna Briggs, John Hopkins and Cochrane methods were not used as the reviewer has not been on a specific training for these methodologies and there was a limited time period in which this review was done in. The JBI mentioned that the reviewers need to be specially trained and that the proposal would need to be peer reviewed by JBI, all which would have been a challenge for this review. A preliminary search of the Cochrane library was done before the proposal for this review was formulated; this search did not identify enough studies, and for this reason the Cochrane method was not used. After further data identification, it was noted that the studies which were included in this review had various study designs which would have made a Cochrane review difficult as mostly randomised control trials are used in Cochrane reviews. A meta-analysis was not done in this review as the studies included in this review had varied study designs. When deciding on the inclusion criteria of studies, the study design of the included studies was not one of the deciding factors; instead the outcomes of the studies selected were of more importance.

3.3 CENTRE FOR REVIEWS AND DISSEMINATION METHOD TO A SYSTEMATIC REVIEW (CRD)

The Centre for Reviews and Dissemination (CRD) is a research body which works on the systematic review methodology. This body has published two editions of their guide, in 1996 and 2001 respectively. Its guide has been recommended as a resource of good practice by organisations such as the National Institute for Health Research Health Technology Assessment (NIHRHTA) programme, and the National Institute for Health and Clinical Excellence (NICE), and has been used widely. The CRD's aim is to promote high standards by providing a guide on how to carry out a health intervention systematic review (CRD, 2009).

According to the CRD, a systematic review should have the following sections:

a) **Background**: This should comprise of the current literature relevant to the review question. It should provide a motivation as to why a review is necessary, the rationale of the inclusion criteria and the focus of the review question.

b) **Review question and inclusion criteria**: A clear specific question should be set, the answer to which will provide substantial information that will guide decision making; this should be clear and precise. The review question should outline the population, interventions, comparators, outcomes and study design, also known by the acronym PICO or PICOS that will be included in the review. The elements of the review question and study design will then be enhanced to establish the inclusion criteria that will be used to select studies for the review.

Explanations of letters used in PICOS

Population: The population should be relevant to the population in which the findings of the review will be applied. The inclusion criteria should be defined in terms of the disease or condition of interest. Any specified restrictions need to be justifiable and relevant.

Intervention: The nature of the intervention investigated in the review should be framed either in broad or specific terms. Aspects which are usually stated incorporate the precise nature of the intervention, the person delivering the intervention or the setting in which the intervention is delivered.

Comparators: In reviews where comparative studies are included, the eligible comparators should be specified. The comparators should be carefully defined so that the terms are clear.

Outcomes: The success or failure of an intervention will need to be assessed, according to the differences. The review should investigate a clearly defined set of relevant outcomes and it is important to justify each outcome which is stated.

Study design: The types of studies included in the review will influence the reliability and validity of the results of the review. In some reviews a range of study designs may be needed to address the various questions within a review.

c) **Define the inclusion criteria**: The inclusion criteria should be set so that the borders of the review question are clearly defined. The nature of the interventions and comparators should be specified in detail; complex interventions may require specified consideration of terms. The researcher should be clear about their definitions and what elements are acceptable. Sometimes an operational definition describing the content and delivery of the intervention would be helpful. The inclusion criteria need to catch all the studies of

interest. If the criteria are not well defined, there would be a risk of missing relevant studies and the generalisability of the result may be reduced. However, on the other end of the spectrum, if the criteria are too broad, the review may contain knowledge which is hard to compare and synthesise. The inclusion criteria need to also be practical to apply; if they are too detailed, the screening may become overly complicated and extremely time-consuming.

Three important aspects to consider would be the methodological quality, language and publication type of the included studies. The included studies need to be of a sound methodological standard which is assessed later in the CRD process, so that the review is based on the best quality evidence available. It is ideal to include studies of all languages to reduce the risk of language bias but this is time consuming so, if a study is identified, this study can be excluded on the bias of language, as long as this is documented. Preferably, a review should aim to include all relevant studies regardless of the publication status to avoid the risk of publication bias. Studies are not always published as full text articles, but may be published as reports, chapters in books, theses, conference abstracts or sometimes informally reported. On-going studies should be identified as they are a useful starting point for subsequent reviews and updates and may improve the quality of the conclusion about future research, as they will indicate where new research has already started.

d) **Identifying research evidence**: A search strategy to identify research should be included, specifying the databases and additional sources that will be used. The search terms are derived from deconstructing the PICOS. A decision is made at this stage about adding the publication date and language restrictions.

e) **Study selection**: This stage is carried out in two steps, an initial screening of titles and abstracts against the inclusion criteria to find relevant studies, followed by screening the full text of the studies identified in the step before. The process for decisions on the selection of studies should be specified.

f) **Data extraction**: The research protocol or proposal should outline the information that will be extracted from the included studies for the review and should provide any detail about software that might be used for data extraction purposes. The process of data extraction should be stated and what the researcher would do if information were missing from the studies which have been included in the review.

g) **Quality assessment**: the method for appraisal of each study needs to be documented, with examples of the exact quality criteria which are used. This process records the strengths and weaknesses of each of the included studies; a sign whether the results have been unjustifiably influenced by the study design or the way the study was carried out is given.

h) **Data synthesis**: This stage involves the organisation, combination and summary of the findings of each of the studies included in the review. The results of the individual studies are brought together to consider the strength of the evidence, explore any observed effects across the studies, and investigate the possible reasons for any discrepancies. This enables reliable conclusions to be drawn from the evidence. The strategy for data synthesis should be specified. It should state whether a meta-analysis or narrative synthesis will be used; this is dependent on the study data that is available. The protocol should also specify any significant outcomes and what effective measures will be used. Any planned sensitivity analyses or investigations of publication bias should also be described.

The four steps as stipulated in the CRD's guide are:

- The first step would be to develop a theory on how the intervention of the study works, why it works and for whom the intervention works.
- The second step would be to develop a preliminary synthesis of findings from the included studies.
- The third step would involve exploring the relations within and between the studies.
- The fourth step would involve assessing the strength of the synthesis.

i) **Dissemination**: It is an imperative part of the review process to make sure that the crucial knowledge from the review reaches the relevant audience. In the protocol or proposal stage the method of dissemination is considered, to allow for adequate time, planning and to ensure that the proposed review is properly resourced.

3.4 METHOD OF THIS REVIEW

The systematic review method has been used for this review since this method is able to compare studies that concentrate on the same subject, and explain the differences and similarities among studies. Since systematic reviews strengthen the link between the evidence and clinical practice, this was the best methodology for this review, as practices in ophthalmic care have been analysed and an ophthalmic specific framework has been created. The CRD's (2009) guidance for undertaking reviews in health care has been used as the guide for the methodology of this review. This method was helpful as the reviewer had an understanding of health research but was new to systematic reviews. The CRD's guide was chosen for the process as it was well explained; the method was simplified and was more thorough than the other methods the reviewer came across. The method incorporated all the important aspects that systematic reviews touch on, such as the PICOS, the data extraction process and the data synthesis. This method is similar to that of JHU EPC, JBI and the Cochrane collaboration, in effect the CRD often refers to the Cochrane handbook for more details. This review seems to have followed most of the steps mentioned in the article by Lucas, Baird, Arai, Law & Roberts (2007) which looked at ways for the synthesis of qualitative and quantitative research, using the systematic review method.

The first stage that has been stipulated in the CRD process has already been recorded in the previous chapter, constituting the literature review.

b) Review question: What are the best global practices to manage pre-operative and post-operative nursing care in patients who have undergone cataract and retinal detachment surgery?

Inclusion criteria based on PICO:

Population: This review included studies of patients who had undergone cataract or retinal detachment surgery. Patients were included but not limited to the adult age group of above 18 years old.

Interventions: This review included the various counselling methods that were used to help the patient prepare for surgery; special attention was given to counselling of the patient concerning bed rest, what health education was given to the patient pre-operatively and/or post-operatively, what post-operative health education on care of the eye after the patients' discharge was advised, what information was given to the patient about warning signs and what to do if a warning sign was noticed, what counselling was given about positioning of the patient who had undergone either cataract or retinal detachment surgery.

Comparators: A comparison was done between the health education that was given pre- and post-operatively for cataract and retinal detachment surgery. Various counselling was given to prevent psychological effects and the positioning advised to prevent physical complications with regard to cataract and retinal detachment.

Outcomes: This review looked at whether the patient received adequate care, whether the patient was prepared for surgery, to evaluate the health education given, and looked at whether global practices could be adapted to South Africa.

In this review only English studies were included due to a time limitation in the study. Literature that was sourced was between a five year timeline, from 2008 to 2012.

Exclusion criteria: Studies about general post-operative protocols excluding ophthalmic-related ones, general patient preparedness for surgery excluding ophthalmic surgery, and ophthalmic studies which did not include nursing care, studies not in English and any study prior to 2008 were not included.

c) **Types of studies:** Studies included were clinical trials, articles and studies discussing or containing pre- and/or post-operative care in cataract and/or retinal detachment surgery.

Focus was specifically on counselling of the patient to reduce anxiety pre- and post-operatively, post-operative positioning of the patient and the patient's preparedness for surgery and discharge. Studies that were published between 2008 till 2012 were included in this review.

Studies that were not published as full papers, but as reports, chapters in a book, conference abstracts, and theses or were informally reported were included in this review to avoid the risk of publication bias. No on-going studies were identified, but they were considered to be included in the proposal stage as they would be a useful starting point for subsequent reviews and to provide updates for this review; they may improve the quality of the conclusion about future research as this would indicate where new research had already started. No partially published studies such as conference abstracts were identified, but they were permitted since they could be classified as on-going studies.

d) **Identifying research evidence**: CRD stated that by carrying out a comprehensive search to identify relevant studies, the risk of bias would be reduced in the review process. Articles were identified from various electronic databases, with the majority of the articles being identified from the following databases: Pubmed, EBSCO and Google Scholar. A few articles were identified by visually scanning through reference lists from the relevant studies and by searching other internet resources such as Retina SA, SANCB and Moorefield's Eye Hospital. Moorfield's had patient care pamphlets which this review has used for the comparative section of the results.

When an electronic search was performed, the review question was broken down into concepts which provided the search terms (Egger, Smith & Altman, 2003). Using the population, intervention, outcomes and study types also enhanced the search. Examples of the search terms used were: best practices and cataract, best practices and counselling, cataract and counselling or health education, cataract and pre-operative or post-operative, cataract nursing care, retinal detachment and pre- or post-operative care, retinal detachment and counselling or health education, positioning and cataract or retinal detachment, positioning post-operative cataract or retinal detachment. All results were limited to 2008 till 2012. Studies that were included needed to be evidence-based.

In the first round of identification of research evidence, a total of 49 full text articles were identified. These articles were further scrutinised against the inclusion criteria, resulting in 22 articles being left. These studies were then categorised according to their methodology, resulting in nine quantitative studies, one qualitative study, one mixed method and eleven discussion articles.

e) **Study selection**: All study types were considered and the studies were selected based on the title and, where available, the abstract. The full text of the article was downloaded and then these studies were assessed against the above inclusion criteria. The excluded studies were categorised into two categories: irrelevant study or not suitable. A study that was clearly not relevant was recorded as an irrelevant study, while a study that addressed the topic, but failed to meet one or more criteria was recorded as not suitable, with the reason why the study failed to meet the inclusion criteria. This process allowed an increase in the transparency of the selection process. The majority of the studies identified as not suitable were due to the information being from medical doctors, whereas the evidence needed to be nursing-based or related.
A provision was made should a study seem to meet the inclusion criteria or, in cases where a final decision could not be made based on title and/or abstract alone, a full paper was to be obtained for a detailed evaluation against the inclusion criteria, but none was noted. A provision was made should the amount of information about a study be insufficient to decide whether to include it in the study; a solution was to contact the author to acquire more details, but none was identified.

f) **Data extraction**: The data was analysed using the methods stipulated in the CRD's guide. Each study was summarised using the data extraction tool under the following headings: aim of the study, study type, the inclusion criteria and exclusion criteria of each study, the results of the study and an additional section for other notes. Appendix 1 and 2 attached show the data extraction forms that were used for this purpose.
Quantitative studies were used in this review as there were more articles using this method and quantitative studies happened to meet the objectives of this review. There was one qualitative methodology article identified. The included studies were further summarised in a characteristic table looking at the aim, sample size and characteristic, the

context or setting of the study and the data collection method. Finally the studies were placed into a results table so that all the studies were together and could be compared.

g) **Quality assessment**: During this process the strengths and weaknesses of each included study were recorded, showing a sign whether the results had been unjustifiably influenced by the study design or by the way the study was carried out. The quality of data was assessed to make sure that it was reliable and valid using: The quality assessment tool for quantitative studies by Effective Public Health Practice Project (EPHPP) (2009) and the Critical Appraisal Skills Programme (CASP) (2006) if a qualitative study surfaced. These tools enhanced the validity, reliability and rigor of the studies and are attached. The EPHPP is a team of researchers which produce numerous resources focused on research methods and tools involved in synthesising and appraising. The CASP have helped in the development in an evidence-based approach in health, enabling individuals to develop their skills and make sense of research. Both these organisations received acknowledgement for the use of their tool. Each study was assessed for validity by establishing whether the studies asked an appropriate research question and whether the research question has been answered correctly, and then by looking at the study design and the way the study had been conducted to reduce the risk of bias. Four studies were given a strong rating, while five studies received weak ratings. The studies that received weak ratings were due to the study design and data collection methods. The quality assessment of each included study was double checked by Nursing lecturer at the University of the Western Cape, as she is familiar with the systematic review method. Appendix 3 and 4 show the quality assessment forms used and the guide to interpreting the results.

h) **Data synthesis**: The narrative synthesis is a textual approach that supplies an analysis of the relationship between studies, and the overall assessment of the strength of the evidence. A narrative synthesis was used, as the studies in this review were diverse both clinically and in terms of their methodology.

The four steps as stipulated in the CRD's guide that were used were:

1. To develop a theory on how the intervention of the study works, why it works, and for whom the intervention works
2. To develop a preliminary synthesis of findings from the included studies
3. To involve exploring the relations within and between the studies.
4. To involve assessing the strength of the synthesis.

i) **Dissemination**: As the CRD (2009) states the reasoning for dissemination is to improve the quality of health care and ultimately the health outcomes, the information then needs to be communicated to practitioners and policy makers. Finally the evidence was summarised and a framework was drawn up focusing on pre-operative and post-operative nursing care for cataract and retinal detachment surgery which would be disseminated to an ophthalmologist and two ophthalmic nurses.

3.5 CONCLUSION

Systematic reviews focus on identifying, evaluating and summarising the results of the studies, so that all present knowledge is accessible to the health care provider and decision makers. This methodology is evidence-based and is commonly used to influence clinical protocols. Systematic reviews are able to strengthen the link between effective evidence and clinical practice which was in line with the underlying goal of this review. The following chapter discusses the results of this review.

CHAPTER 4: RESULTS

4.1 INTRODUCTION

This chapter discusses the results of this review. Nine studies met the inclusion criteria and were analysed for the purpose of this review. Outcomes that were examined were: pre-operative care; post-operative care; counselling post-operative care in cataract surgery; engagement in activities of daily living; adherence to medication; face-down positioning; overall pain, anxiety and satisfaction; quality of care; and routine pre-operative medical testing.

The nine studies that were used in this review are as follows:

- Fayers, Abdullah, Walton & Wilkins (2009)
- Hickman, White & White (2010)
- Keay, Lindsley, Tielsch, Katz & Schein (2009)
- Lockey (2009
- Mittra, Kim, Han & Pollack (2009)
- Modi, Shaw, Allman & Simcock (2008)
- Sharma, Ooi, Figueira, Rosenberg, Masselos, Papalkar, Paramanathan, Francis, Alexander & Ferch (2008)
- Shukla, Daly & Legutko (2012)
- Van Vliet, Reus, Sermeus, Vissers, Sol & Lemij (2010)

4.2 TYPES OF STUDIES

The study designs of the included studies varied; this was not a concern because the information from the studies is what was important rather than the method that the researcher used. Two studies used a randomised control trial, with each other study using the following methods: non-randomised interventional clinical study; quantitative descriptive audit; retrospective case series;

audit; prospective consecutive observational study; randomised prospective study; and a case control.

4.3 TYPES OF PARTICIPANTS

All the studies that were reviewed consisted of both male and female participants. Patients who underwent either cataract or retinal detachment surgery were included in the review. All the patients who were included were in the adult age group with the ages varying between the studies.

4.4 TYPES OF INTERVENTIONS

This review included counselling methods that were used to help the patient prepare for ophthalmic surgery pre-operatively, especially cataract and retinal detachment surgery. This review also included interventions around health education relating to discharge and warning signs post-operatively, and the patient positioning post-operatively following retinal detachment surgery.

4.5 TYPES OF OUTCOME MEASURES

The outcomes extracted from the studies were as follows:

- Pre-operative care
- Post-operative care
- Counselling post-operatively in cataract surgery
- Engagement in activities of daily living
- Adherence to medication
- Face-down positioning
- Overall pain, anxiety and satisfaction

- Quality of care
- Routine pre-operative medical testing.

4.6 CHARACTERISTICS OF INCLUDED STUDIES

Studies are identified by the author, the year in which the study was performed and its title. They included the aim of the study, the sample size, and the characteristics of the sample, the context or setting in which the study was carried out. The type of study and data collection methods used to conduct the study is briefly explained. The results of each study are also presented.

Table 4.1: Characteristics of the included studies.

Author & Date	Aim	Sample size	Sample characteristics	Context/setting	Data collection	Type of study/design
1. Fayers, Abdullah, Walton & Wilkins (2009)	To evaluate the extent to which patients unnecessarily restrict activities of daily living post-operatively and to test interventions designed to improve post-operative activity	150 patients (50 in each group x 3)	51% male, 49% female Ages between 44 & 93 years Mean age - 71 years 61% White, 16% Asian, 7% Black, 2% mixed, 6% other ethnicity, and 8% unknown. No statistically significant demographic differences between the 3 groups	Day treatment centre, London. Consecutive patients having routine first-eye sutureless small-incision cataract surgery	Questionnaire	Non-randomised interventional clinical study
2. Hickman, White & White (2010)	To assess the impact of medication frequency illustrations in patient education for use in the developing world.	65 patients (32 oral group [19 patients & 13 family members], 33 illustration group [22 patients and 11 family members])	91% female - illustration group & 68% female - oral group. Average age - illustration group was 71, & oral group 73.	Northwest Haiti Christian Mission in St-Louis du Nord Patients undergoing cataract surgery for a duration of eight days	Individual interviews	Randomised controlled trial

Author & Date	Aim	Sample size	Sample characteristics	Context/setting	Data collection	Type of study/design
3. Keay, Lindsley, Tielsch, Katz & Schein (2009)	● To investigate the evidence for reductions in adverse events through pre-operative medical testing ● To estimate the average cost of performing routine medical testing	3 studies Study 1 - 1276 patients Study 2 - 1025 patients Study 3 – 19 557 operations (18 189 patients)	Study 1 - Age: Not reported Gender: Included men and women Inclusion criteria: Study 2- 53% male, 47% female. Mean age – 66,5 years. Study 3- 39% male, 61% female Mean age - Routine testing group = 73 years & No testing group = 74 years.	Study 1- Italy Patients admitted to the day surgery section at the Institute of Ophthalmology for outpatient cataract surgery under local anaesthesia Study 2 - Brazil Patients scheduled to undergo cataract surgery Study 3 - United States and Canada Patients scheduled to undergo cataract surgery	Study 1 – Randomised control trial Study 2 – Randomised control trial Study 3 – Randomised control trial	Randomised controlled trial

Author & Date	Aim	Sample size	Sample characteristics	Context/setting	Data collection	Type of study/design
4. Lockey (2009)	To measure the effectiveness of information against the level of patient satisfaction	75 patients	65% female. Mean age – 77 years. The largest groups respectively were (n=31) 70 -79 years followed by (n=30) 80- 89 years age group.	Post-cataract clinic - October and November 2008.	Audit questionnaire	Quantitative descriptive audit
5. Mittra, Kim, Han & Pollack (2009)	To determine the rate of successful macular hole closure with 1-day post-operative prone positioning	56 eyes of 53 patients	23% male, 77% female Mean age - 69 years old	Minneapolis/St Paul, Medical College of Wisconsin, & Illinois Retina Associates and Rush Medical College. USA All macular hole surgeries performed by the authorsbetween 11/02 and 2/04 were reviewed	Review	Retrospective case series

Author & Date	Aim	Sample size	Sample characteristics	Context/setting	Data collection	Type of study/design
6. Modi, Shaw, Allman and Simcock (2008)	To consider patients' experience of cataract surgery in terms of pain, anxiety and their overall satisfaction, and determine whether the measures we have in place are effective	268 patients and 15 surgeons & 26 anaesthetists	38% male, 62% female	Routine day cases with local anaesthetic cataract surgery at the Royal Devon and Exeter NHS Trust	90mm visual analogue scale (1-10)	Audit
7. Sharma, Ooi, Figueira, Rosenberg, Masselos, Papalkar, Paramanathan, Francis, Alexander & Ferch (2008)	To assess patient recall of intra-operative pain, anxiety, fear, and sensory perceptions during second eye clear corneal cataract surgery using assisted topical anaesthesia (ATA), in comparison with first eye cataract surgery using the same technique	127 patients	35% male, 65% female	Free-standing dedicated Ophthalmic Day Surgery Centre. Patients undergoing first eye clear corneal cataract surgery using ATA (first surgery cohort), and those patients undergoing second eye surgery using ATA where the first eye had also been operated on using ATA (second surgery cohort)	Questionnaire	Prospective, consecutive, observational study

Author & Date	Aim	Sample size	Sample characteristics	Context/setting	Data collection	Type of study/design
8. Shukla, Daly & Legutko (2012)	To determine the effectiveness of verbal, written, and videotaped descriptions of cataract surgery on patients' understanding of the risks, benefits, and treatment alternatives	100 patients (25 in each group x 4)	94% male, 6% female. Mean age - 74 years	Veterans Affairs Boston Healthcare System, Boston, Massachusetts, USA	Questionnaire	Randomised prospective study
9. van Vliet, Reus, Sermeus, Vissers, Sol & Lemij (2010)	To determine experiences and preferences of cataract patients with co-managed postoperative care	483 patients (194 control and 289 experimental)	No statistical differences were found in age or sex	Rotterdam Eye Hospital, Netherlands. January 2007 & September 2008	Questionnaire	Case-control

4.6.1 STUDY 1

Study identifier: Fayers, Abdullah, Walton & Wilkins (2009). Impact of written and photographic instruction sheets on patient behaviour after cataract surgery

Aim: To evaluate the extent to which patients unnecessarily restrict activities of daily living post-operatively and to test interventions designed to improve post-operative activity

Sample size: There were a total of 150 participants in the study who were divided into three groups with 50 participants in each. The three groups were:

- Standard group – standard discharge instructions informing patients that they could continue all activities of daily living
- Written group – an additional written sheet specifying nine activities of daily living that are safe to perform
- Photo group - an additional sheet with photographs of people performing safe activities of daily living.

Sample characteristics: Consecutive patients having routine first-eye sutureless small-incision cataract surgery were included in the study. The sample constituted of 51% male and 49% female participants, with the mean age being 71 years old.

Context/setting of study: A day treatment centre in London.

Type of study and data collection method: Non-randomised interventional clinical study, questionnaires were used to collect the data.

Results: Many patients unnecessarily avoided activities of daily living after cataract surgery. Providing an additional written sheet did not significantly improve this, whereas a photograph sheet did. Better awareness of the safety and rapid rehabilitation after modern cataract surgery is needed in hospitals and primary care centres.

4.6.2 STUDY 2

Study identifier: Hickman, White & White (2010). Illustrations as a patient education tool to improve recall of postoperative cataract medication regimens in the developing world

Aim: To assess the impact of medication frequency illustrations in patient education for use in the developing world

Sample size: There were a total of 65 participants in the study. Participants were divided into two groups:

- Oral group: 32 participants which consisted of 19 patients and 13 family members
- Illustration group: 33 participants which consisted of 22 patients and 11 family members.

Sample characteristics: Patients undergoing cataract surgery for a duration of eight days

- Oral group: 68% of the sample was female and 32% were male. The average age of the participants was 73 years old.
- Illustration group: 91% of the sample was female, with 9% being male. The average age of the participants was 71 years old.

Context/setting of study: Northwest Haiti Christian Mission in St-Louis du Nord

Type of study and data collection method: Randomised controlled trial with individual reviews done to collect the data

Results: Illustrations appear to be a useful adjunct in explaining complex medication regimens to patients in the developing world where cultural and language barriers can be difficult to bridge. This better understanding could translate into improved medication compliance and outcomes.

4.6.3 STUDY 3

Study identifier: Keay, Lindsley, Tielsch, Katz & Schein (2009). Routine preoperative medical testing for cataract surgery (Review)

Aim: To investigate the evidence for reductions in adverse events through pre-operative medical testing, to estimate the average cost of performing routine medical testing

Sample size: There were three studies that were reviewed in this study.

- Study 1 – 1276 patients
- Study 2 – 1025 patients
- Study 3 – 19 557 operations (18 189 patients)

Sample characteristics:

- Study 1 – Patients admitted to the day surgery section at the Institute of Ophthalmology for Outpatient Cataract Surgery under local anaesthesia. The sample included male and female participants; the age of participants was not reported.
- Study 2 – Patients scheduled to undergo cataract surgery. This study comprised of 53% male and 47% female participants, with the mean age being 66,5 years.
- Study 3 – Patients scheduled to undergo cataract surgery. This study had 39% male and 61% female participants, with the mean age being 73,5 years old.

Context/setting of study:

- Study 1 was set in Italy.
- Study 2 was set in Brazil.
- Study 3 was set in the United States of America and Canada.

Type of study and data collection method: A randomised control trial was carried out.

Results: Routine pre-operative testing does not increase the safety of cataract surgery.

4.6.4 STUDY 4

Study identifier: Lockey (2009). The provision of information for patients prior to cataract surgery.

Aim: To measure the effectiveness of information against the level of patient satisfaction

Sample size: There was a total of 75 participants in the study.

Sample characteristics: The sample consisted of 65% female and 35% male participants, with the mean age being 77 years old.

Context/setting of study: The study was carried out in a post-cataract clinic between October and November 2008.

Type of study and data collection method: A quantitative descriptive audit study design was used with audit questionnaires being used to collect the data.

Results: This audit provided some evidence that the provision of information can influence patient care and understanding. Data shows that patients value the importance of providing good quality verbal and written information at pre-operative assessment.

4.6.5 STUDY 5

Study identifier: Mittra, Kim, Han & Pollack (2009). Sustained postoperative face-down positioning is unnecessary for successful macular hole surgery.

Aim: To determine the rate of successful macular hole closure with one-day post-operative prone positioning

Sample size: There was a total of 53 participants in the study of whom 56 eyes were examined.

Sample characteristics: All macular hole surgeries performed by the authors between November 2002 and February 2004 were reviewed in the study. The sample consisted of 27% male and 77% female participants, with the mean age of 69 years old.

Context/setting of study: The study was carried out in Minneapolis/St Paul, Medical College of Wisconsin, and Illinois Retina Associates and Rush Medical College in the United States of America.

Type of study and data collection method: A retrospective case series, with a review used to collect data

Results: Sustained post-operative face-down positioning may not be necessary for successful macular hole closure, since 93% of eyes achieved hole closure with prone positioning for only one day.

4.6.6 STUDY 6

Study identifier: Modi, Shaw, Allman & Simcock (2008). Local anaesthetic during cataract surgery: Factors influencing perception of pain, anxiety and overall satisfaction

Aim: To consider the patients' experience of cataract surgery in terms of pain, anxiety and their overall satisfaction, and determine whether the measures in place are effective

Sample size: There was a total of 268 patients, 15 surgeons and 26 anaesthetists in the study.

Sample characteristics: Routine day cases with local anaesthetic cataract surgery were included in the study. The sample consisted of 38% male and 62% female participants.

Context/setting of study: The Royal Devon and Exeter NHS Trust

Type of study and data collection method: An audit was carried out using a 90mm visual analogue scale (1-10).

Results: Patients reported less pain and anxiety and significantly higher satisfaction scores with a handholder present in theatre. Satisfaction was higher and anxiety was the same in patients selected to have sedation compared to those who were not – suggesting that sedation reduces anxiety and increases satisfaction.

4.6.7 STUDY 7

Study identifier: Sharma, Ooi, Figueira, Rosenberg, Masselos, Papalkar, Paramanathan, Francis, Alexander & Ferch (2008). Patient perceptions of second eye clear corneal cataract surgery using assisted topical anaesthesia

Aim: To assess patient recall of intra-operative pain, anxiety, fear and sensory perceptions during second eye clear corneal cataract surgery, using assisted topical anaesthesia (ATA), in comparison with first eye cataract surgery using the same technique

Sample size: There was a total of 127 participants in the study.

Sample characteristics: Patients undergoing first eye clear corneal cataract surgery using ATA (first surgery cohort), and those patients undergoing second eye surgery using ATA where the first eye had also been operated on using ATA (second surgery cohort) were included in the study. The sample consisted of 35% male and 65% female participants.

Context/setting of study: Free-standing dedicated Ophthalmic Day Surgery Centre

Type of study and data collection method: A prospective consecutive observational study design was used with voluntary questionnaires being used to gather data.

Results: There was no significant difference in levels of intra-operative pain, anxiety, fear and sensory perceptions experienced by patients between the first eye and second eye surgeries. We recommend that pre-operative counselling for a patient's second eye be as comprehensive as for the first eye surgery.

4.6.8 STUDY 8

Study identifier: Shukla, Daly & Legutko (2012). Informed consent for cataract surgery: patient understanding of verbal, written, and videotaped information

Aim: To determine the effectiveness of verbal, written and videotaped descriptions of cataract surgery on patients' understanding of the risks, benefits and treatment alternatives

Sample size: There was a total of 100 participants in the study who were divided into four groups with 25 participants in each group:

- Conventional verbal information
- Conventional verbal information plus second-grade reading level brochure
- Conventional verbal information plus eighth-grade reading level brochure
- Conventional verbal information plus American Academy of Ophthalmology DVD: Understanding Cataract Surgery: Patient Education DVD Featuring an Aid to Informed Consent.

Sample characteristics: Patients who were eligible for cataract surgery participated in this study. The sample consisted of 94% male and 6% female participants, with the mean age of the participants being 74 years old.

Context/setting of study: The study was carried out at Veterans Affairs Boston Healthcare System, Boston, Massachusetts in the United States of America.

Type of study and data collection method: Randomised prospective study design was used with questionnaires to gather information.

Results: Concise informed consent information sheets at lower reading grade levels and videotape presentation optimised patient understanding of the risks, benefits and treatment alternatives to cataract surgery. The cost-benefit of these results is important because better patient understanding has the potential to decrease the risk for indemnity payments awarded because of inadequate informed consent.

4.6.9 STUDY 9

Study identifier: Van Vliet, Reus, Sermeus, Vissers, Sol & Lemij (2010). Patients' experiences and preferences with co-managed care in a cataract pathway

Aim: To determine experiences and preferences of cataract patients with co-managed post-operative care

Sample size: There was a total of 483 participants in the study who were divided into two groups:

- Control group – 194 patients
- Experimental group – 289 patients

Sample characteristics: Patients who underwent cataract surgery were included in this study. No statistical differences were found in age or sex of participants.

Context/setting of study: The study was carried out at Rotterdam Eye Hospital, Netherlands in January 2007 & September 2008.

Type of study and data collection method: Case-control study design with questionnaires being used to gather data

Results: Overall, patients with cataracts, highly rated co-managed care pathways without any post-operative contact with ophthalmologists. Patients who were reviewed by a nurse were reported to prefer the same first-day review method significantly more often than those who were reviewed by an ophthalmologist. Patients still preferred ophthalmologists to optometrists for their final review.

4.7 COMPARISON BETWEEN INCLUDED STUDIES

Keay et al (2009), Lockey (2009), and Shukla et al (2012) dealt with pre-operative care. Sharma et al (2008) dealt with intra-operative perceptions, but the recommendations that came out of this study suggested better pre-operative care. All the other studies dealt with post-operative care.

Fayers et al (2009) focused on patients' engagement in daily activities following cataract surgery. Hickman et al's (2010) outcomes focused on patients' adherence to medication. Keay et al (2009) observed where routine pre-operative medical testing was needed before cataract surgery.

Lockey (2009), Sharma et al (2008) and Shukla et al (2012) all had a common outcome of the need for counselling pre-operatively in cataract surgery. Mittra et al's (2009) outcome focused on face-down positioning following retinal detachment surgery.

Modi et al (2008) and Sharma et al (2008) measured the overall pain, anxiety and satisfaction of the patients. Van Vliet et al (2010) measured the quality of care that cataract surgery patients received.

Table 4.2: Results Table

KEY TO TABLE

a) Pre-op
b) Post-op
c) Counselling pre-op in cataract surgery
d) Engagement in activities of daily living
e) Adherence to medication
f) Face-down positioning
g) Overall pain, anxiety and satisfaction
h) Quality of care
i) Routine preoperative medical testing.

Author & Date	Aim	a	b	c	d	e	f	g	h	I	Results
1. Fayers, Abdullah, Walton & Wilkins (2009)	To evaluate the extent to which patients unnecessarily restrict activities of daily living post-operatively and to test interventions designed to improve post-operative activity		√		√						Many patients unnecessarily avoided activities of daily living after cataract surgery. Providing an additional written sheet did not significantly improve this, whereas a photograph sheet did. Better awareness of the safety and rapid rehabilitation after modern cataract surgery is needed in hospitals and primary care centres.
2. kman, White & White (2010)	To assess the impact of medication frequency illustrations in patient education for use in the developing world		√			√					Illustrations appear to be a useful adjunct in explaining complex medication regimens to patients in the developing world where cultural and language barriers can be difficult to bridge. This better understanding could translate into improved medication compliance and outcomes.
3. Keay, Lindsley, Tielsch, Katz & Schein (2009)	● To investigate the evidence for reductions in adverse events through pre-operative medical testing ● To estimate the average cost of performing routine medical testing	√								√	Routine pre-operative testing does not increase the safety of cataract surgery.

4. Lockey (2009)	To measure the effectiveness of information against the level of patient satisfaction	√		√							This audit provides some evidence that the provision of information can influence patient care and understanding. Data show that patients value the importance of providing good quality verbal and written information at pre-operative assessment.
5. Mittra, Kim, Han & Pollack (2009)	To determine the rate of successful macular hole closure with one-day post-operative prone positioning		√				√				Sustained postoperative face-down positioning may not be necessary for successful macular hole closure, since 93% of eyes achieved hole closure with prone positioning for only one day.
6. Modi, Shaw, Allman & Simcock (2008)	To consider our patients' experience of cataract surgery in terms of pain, anxiety and their overall satisfaction, and determine whether the measures we have in place are effective		√					√			Patients reported less pain and anxiety and significantly higher satisfaction scores with a handholder present in theatre. Satisfaction was higher and anxiety was the same in patients selected to have sedation compared to those who were not – suggesting that sedation reduces anxiety and increases satisfaction.
7. Sharma, Ooi, Figueira, Rosenberg, Masselos, Papalkar,	To assess patient recall of intra-operative pain, anxiety, fear and sensory perceptions during second eye clear corneal cataract surgery, using assisted topical			√				√			There was no significant difference in levels of intra-operative pain, anxiety, fear and sensory perceptions experienced by patients between the first eye and second eye surgeries. We recommend that pre-operative counselling for a patient's second eye be as comprehensive as

Paramanathan, Francis, Alexander & Ferch (2008)	anaesthesia (ATA), in comparison with first eye cataract surgery using the same technique										for the first eye surgery.
8. Shukla, Daly & Legutko (2012)	To determine the effectiveness of verbal, written and videotaped descriptions of cataract surgery on patients' understanding of the risks, benefits and treatment alternatives	√		√							Concise informed consent information sheets at lower reading grade levels and videotape presentation optimised patient understanding of the risks, benefits and treatment alternatives to cataract surgery. The cost-benefit of these results is important because better patient understanding has the potential to decrease the risk for indemnity payments awarded because of inadequate informed consent.
9. Van Vliet, Reus, Sermeus, Vissers, Sol & Lemij (2010)	To determine experiences and preferences of cataract patients with co-managed post-operative care		√						√		Overall, patients with cataracts highly rated co-managed care pathways without any post-operative contact with ophthalmologists. Patients who were reviewed by a nurse reported to prefer the same first-day review method significantly more often than those who were reviewed by an ophthalmologist. Patients still preferred ophthalmologists for their final review to optometrists.

4.8 DISCUSSION OF RESULTS

Fayers et al (2009) concluded that patients unnecessarily avoided daily activities following cataract surgery. Providing an additional written sheet did not reduce the patients' avoidance of activities of daily living; however, with an information sheet with photographs, patients were able to better understand which activities they should avoid. This study found that more awareness of the safety and speedy rehabilitation following cataract surgery is needed in hospitals and primary care centres.

Hickman et al (2010) established that illustrations are quite useful when explaining complex medication regimes to patients, especially where there are challenging cultural and language barriers. It is suggested that the patients' better understanding may result in improved medication compliance and better post-operative results.

Keay et al (2009) observed that routine pre-operative medical testing does not increase the safety of cataract surgery.

Lockey (2009), Sharma et al (2008) and Shukla et al (2012) all provided evidence that counselling is needed pre-operatively in cataract surgery. It was shown that the information received pre-operatively influences the care and patients' understanding. It was shown in Lockey (2009) that patients valued receiving good quality verbal and written information pre-operatively as this information helps to reduce anxiety and fear. Sharma et al (2008), at the end of the study, recommended that pre-operative counselling for a patient's second cataract surgery be as detailed as for the first cataract surgery. Shukla et al (2012) found that the consent information sheets that are given to patients pre-operatively should be at a lower reading grade and that video presentations increase the patients understanding about the risks, advantage and treatment alternatives to cataract surgery.

Mittra et al (2009) noticed that prolonged post-operative face-down positioning following retinal detachment repair surgery may not be necessary, as one day of prone positioning resulted in 93% of eyes having effective macular hole closure.

Modi et al (2008) noted that patients reported less pain and anxiety, and higher satisfaction scores with a handholder in theatre. It was also suggested that sedation reduces anxiety.

Van Vliet et al (2010) observed that, overall, patients preferred to be reviewed post-operatively by the nurse on the same day of cataract surgery, but still preferred to have their final review done by an ophthalmologist rather than an optometrist. This study also showed that patients were happy with a co-managed care pathway in the health system.

4.9 CONCLUSION

This chapter discussed the finding of this review, highlighting the importance of counselling, health education and post-operative positioning of the patient. The next chapter discusses the reviews findings in comparison with an established information sheet and the limitations that were observed in this review.

CHAPTER 5: DISCUSSION

5.1 INTRODUCTION

This chapter reviews findings that are evidence-based and were discussed in Chapter 4 and are compared with an established ophthalmic information sheet. The conclusions from the research findings, the limitations of this review and recommendations will be discussed in this chapter.

5.2 MOORFIELDS EYE HOSPITAL NHS FOUNDATION TRUST

Moorfields Eye Hospital was founded in 1804, and is a leading eye hospital, situated in London, recognised globally, that specialises in clinical care, research, teaching and education. The main focus of this institution is the treatment and care of patients with a wide range of eye problems, who require treatment that is not available elsewhere in the United Kingdom. Moorfields Eye Hospital is also a postgraduate teaching centre and a national centre for ophthalmic research, and has the largest ophthalmic research programme in the world. They are also members of Vision 2020, an organisation committed to raising public awareness of blindness and vision impairment as major public health issues.

Moorfields Eye Hospital is a leading ophthalmic hospital globally, for this reason their information sheets have been used to compare the results of this study.

5.3 COMPARISON OF STUDY RESULTS WITH MOORFIELDS EYE HOSPITAL INFORMATION SHEETS

This association has two information sheets that will be used for comparison with this review's findings. The first information that the Moorfields Eye Hospital cataract information sheet starts off with is an explanation as to what a cataract is. This is done so that the patient has a basic understanding of the condition. This falls in line with Lockey (2009) who concluded that patients appreciate good quality verbal and written instruction during the pre-operative stage. Shukla et al

(2012) found that consent information sheets at a lower reading grade and video presentations helped the patients to understand the risk, benefits and treatment alternative to cataract surgery; in the Moorfields Eye Hospital cataract information sheet the risks, benefits and patient's decision concerning the treatment is touched on. While Keay et al (2009) concluded that routine medical pre-operative testing does not increase the safety of cataract surgery, Moorfields Eye Hospital cataract information sheet discusses why the patient needs to have a visual acuity test done so that the correct strength of intra-ocular lens can be used.

The intra-operative process is discussed in Moorfields Eye Hospital cataract information sheet, but none of the included studies in this review explicitly mentioned this process. This would involve discussing with the patient what occurs during the surgery, the type of anaesthetic used and reassuring the patient that they will be able to see after surgery. The patient would need to be made aware of the complications that may arise from the surgery. This could be classified under the overall pain, anxiety and satisfaction outcome. If the patient does not understand what would happen during the surgical procedure, they may become anxious; this in turn influences the pain factor and the patient's overall satisfaction. This would then correspond with the results from Modi et al (2008) showing that handholders in theatre yielded better satisfaction scores from patients. Sharma et al (2008) found that there were no differences in the levels of intra-operative pain, anxiety, fear and sensory perceptions experienced by patients between their first and second cataract surgeries. It was recommended that the patient receive comprehensive counselling pre-operatively, whether it is the first or second cataract surgery. All of the above information would be under the pre-operative counselling section.

The Moorfields Eye Hospital cataract information sheet regarding the aftercare segment discusses whether the patient's eye would need to be covered following the operation. The installation of eye drops is comprehensively discussed - this is supported by Hickman et al (2010) who concluded that illustrations are useful when explaining the detailed medication regime. The illustrations are especially useful where there are language and cultural barriers in communication – invaluable in developing countries such as South Africa. By getting the patient to better understand the medication regime, there would hopefully be better compliance and better surgical outcomes.

The Moorfields Eye Hospital cataract information sheet briefly mentions that the patient should avoid rubbing the eye post-operatively and that he or she should resume normal physical activity post-operatively within a few days. Fayers et al (2009) concluded that patients unnecessarily avoid daily living activities following cataract surgery. It was found that an additional photograph sheet illustrating activities helped the patients to have a better understanding of which activities they could resume.

Van Vliet et al (2010) found that patients highly rated co-managed care pathways, and that patients who were reviewed by a nurse on the first day following cataract surgery preferred this method compared to those who were reviewed by an ophthalmologist. However, the patients preferred their final review to be conducted by an ophthalmologist. This further motivates as to why nurses should be actively involved in the post-operative care of patients. All the above information would be categorised under post-operative health education.

The Moorfields Eye Hospital retinal detachment information sheet follows similar counselling and health education as the cataract information sheet, the main difference being in the post-operative positioning of the patient and the warning signs following surgery. The retinal detachment surgery sheet stresses that the patient needs to position the head post-operatively to provide support to seal the holes in the retina, depending on whether the surgeon uses gas or silicone oil in the patient's eye. This is corroborated by Mittra et al (2009) who found that just one day of post-operative positioning achieved hole closure, and that prolonged post-operative face- down or prone positioning may not be necessary.

Using these results a pre-operative and post-operative nursing care framework is formulated.

5.4 CONCLUSION OF REVIEW

The review question is:

- What are the best global practices to manage pre-operative and post-operative nursing care in patients who have undergone cataract and retinal detachment surgery?

The objectives were:

1. To determine the best practice in pre-operative and post-operative care in patients who had undergone cataract and/or retinal detachment surgery in regard to:
   a. Counselling to prevent psychological effects
   b. Health education offered by nurses
   c. Positioning to prevent physical complications.
2. To develop a framework based on systematic reviews for pre-operative and post-operative ophthalmic nursing care in South Africa

The conclusions are based on evidence from the nine studies and the Moorfield's Eye Hospital information leaflets that were included in this review. This review was able to answer the research question and meet the objectives that were set out at the beginning of the review. Evidence that was identified was applicable to nursing and will be able to be adapted to the South African context.

5.4.1 CONCLUSIONS REGARDING COUNSELLING TO PREVENT PSYCHOLOGICAL EFFECTS

Patients need to be made aware of what a cataract and retinal detachment is, so that they have a basic understanding of their condition. A patient who is informed would be better able to handle the surgery and should have a positive experience. Information sheets that could be given to the patient should be at a lower reading grade, while the risks and benefits of surgery should be well explained to the patient.

The surgical process should be explained to the patient as this will help to reduce the patient's anxiety. This would involve discussing with the patient what occurs during the surgery, the type of anaesthetic used and reassuring the patient that they will be able to see after surgery. The patient would need to be made aware of the complications that may arise from the surgery. If the patient does not understand what will happen during the surgical procedure, he may become anxious – this in turn influences the pain factor and the patient's overall satisfaction.

5.4.2 CONCLUSIONS REGARDING HEALTH EDUCATION OFFERED BY NURSES

The instillation of eye drops would need to be explained and demonstrated to the patient and illustrations are useful when explaining the detailed medication regime. The illustrations are especially useful where there are language and cultural barriers in communication which is valuable in developing countries such as South Africa. By getting the patient to better understand the medication regime, there would hopefully be better compliance and better surgical outcomes. The resuming of daily activities would need to be discussed with the patient, and an additional photograph sheet with activities could help the patients to have a better understanding of which activities they could resume.

5.4.3 CONCLUSIONS REGARDING POSITIONING TO PREVENT PHYSICAL COMPLICATIONS

The patient who undergoes retinal detachment surgery needs to position their head post-operatively to provide support to seal the holes in the retina, depending on whether the surgeon used gas or silicone oil in the patient eye. Prone positioning, that is face-down positioning for just one post-operative day, can achieve hole closure. The nurse should explain the reasoning behind the prone positioning so that the patient adheres to the positioning.

5.5 LIMITATIONS

A limitation that was identified was the short time frame in which this study was done in; more relevant data may have been missed due to this limitation.

5.6 RECOMMENDATIONS

Since no existing ophthalmic protocols are in place in the Western Cape to manage pre-operative and post-operative care in ophthalmology, a recommendation is made that the framework from this review be used to care for patients in these settings.

5.7 CONCLUSION

This chapter discussed the findings of this review and compared them with the Moorfields information sheets. The conclusions from the research findings, the limitations of this review and recommendations were discussed. The findings of this review have been used to formulate the pre-operative and post-operative ophthalmic framework for cataract and retinal detachment surgery.

OPTHALMIC FRAMEWORK: CATARACT AND RETINAL DETACHMENT SURGERY

PRE-OPERATIVE

1 COUNSELLING

1.1 The patient needs to know what a cataract is

A normal eye has a clear lens that helps light rays to focus on the retina, which send messages to the brain which allows us to see. When a cataract develops, the lens becomes cloudy and stops the light rays from passing to the retina. The picture that the retina receives becomes dull and unclear. Cataracts usually form slowly and people go through a slow blurring of vision. Age-related cataract is the most common type; that is a normal process of ageing that causes the lens to harden and become cloudy, occurring any time after 40 years of age.

1.2 The patient needs to be informed about what the surgery entails

An ophthalmic surgeon will perform the surgery using a microscope. Patient should be reassured that the eye is not taken out of the socket during the surgery. The surgical technique varies according to the surgeon, but the basic concept is that sound waves are used to soften the lens that is then flushed out using a water solution, leaving the back membrane behind. An intra-ocular lens, also known as IOL, is then implanted to help the patient with distant vision. Surgery is done while the patient lies down on the operating bed. The majority of cataract surgeries are performed using local anaesthetic. The patient will be awake during the surgery and will be aware of a bright light but will not be able to see what is going on.

1.3 Serious complications are rare following cataract surgery, but the patient should be made aware of them.

A complication that may arise is tearing of the lens membrane inside the eye which may sometimes result in reduced vision. Should this happen, the intraocular lens may have to be implanted in a second operation. If all or part of the cataract is lost into the back of the eye a further surgery will be required. Bleeding inside the eye may cause complications as well.

1.4 The patient should be made comfortable

The patient's questions should be answered to the nurse's best knowledge and honestly. This gives the patient reassurance and helps the patient to be less anxious. If the patient does not understand what happens during the surgical procedure, the patient may become anxious; this in turn influences the pain factor and the patient's overall satisfaction.

POST-OPERATIVE

2 HEALTH EDUCATION

2.1 Instillation of eye drops

The patient should be taught as to how to put the eye drops in.

a. Firstly the patient needs to wash his or her hands before and after instilling the eye drops, to prevent the risk of an infection.
b. The patient needs to tilt their head back.
c. The lower eye lid should be pulled down with one hand.
d. The patient should look up and let the eye drop fall inside the lower lid, this is so that the drop is absorbed into the conjunctival sac.
e. The patient should be careful that the tip of the eye drop bottle does not touch the eye, as this can cause the remaining drops to become contaminated. This could result in the eye becoming repeatedly infected, due to the patient using the same bottle of eye drops.

2.2 Avoid rubbing of operated eye

The patient may notice that the operated eye is light sensitive or photosensitive. It is advisable that the patient wear a pair of sunglasses, should this be the case. Rubbing of the eye should be avoided as this could cause physical damage to the eye.

2.3. Resuming daily activities

The following activities can be continued the first day following cataract surgery:

- Bending
- Washing of face and hair
- Cooking
- Cleaning
- Shopping
- Normal exercise such as walking, dancing cycling and golf
- Watch television or using a computer
- Gardening

The patient should avoid heavy lifting of objects, contact sport such as rugby and boxing, and swimming for at least a month following surgery.

2.4. Warning signs

The patient must be made aware of these warning signs and to immediately seek medical attention:

- **Infection following surgery.** The eye becomes red with increasing discomfort and the vision gets worse in the days following surgery.
- **Inflammation of the eye.** In a condition called uveitis, where the eye could become red and aching, the inflammation can be treated with drops.
- **Blurring of the central vision.** Cystoid macular oedema may occur. This is an accumulation of fluid in the retina, causing blurring of the central vision. This usually resolves itself within a few months but may require extra eye drops and can sometimes have a permanent effect on the patient's vision.
- **Distorted vision.** The implanted lens may move from its original position which causes the distorted vision. If this happens, the patient may require further surgery to reposition the lens.

- **A shadow, lights or floaters in the patient's field of vision**. Shadows can also be caused by the retina becoming separated from the inner wall of the eye, known as retinal detachment. If the patient notices an enlarging shadow in their field of vision especially with increasing floaters or flashing lights, the ophthalmologist or hospital should be immediately contacted.
- **A lot of pain in the eye.**

3 POSITIONING OF PATIENT FOLLOWING RETINAL DETACHMENT SURGERY

Patients who undergo retinal detachment surgery should be in a prone position following surgery. This is so that the gas or oil substance that is used during the repair surgery can provide pressure on the section of the retina that has been repaired. The patient should remain in a prone position for a minimum of one day. The retina will have the best chance to heal if the patient follows these instructions.

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APPENDICES

APPENDIX 1

		Tick appropriate column										
Author and Year	**Title**	**Cataract**	**Retinal detachment**	**Pre-op**	**Post-op**	**Counselling**	**Positioning**	**Health education**	**Included**	**Excluded**	**Other: Specify**	**Additional**
Chang, Congdon, Baker, Bloem, Savage & Sommer (2008)	The surgical management of cataract: barriers, best practices and outcomes	√		√	√					(Not suitable)	Article deals with the surgery itself	
Natchiar, Thulasiraj & Sundaram (2008)	Cataract surgery at Aravind Eye Hospital: 1988-2008	√		√	√					(Not suitable)	Not nursing related	
Ness, Kern & Frank (2011)	Postoperative nosocomial endophthalmitis: is peri-operative antibiotic prophylaxis advisable? A single centre's experience	√		√	√					(Not suitable)	Article discusses antibiotic prophylaxis	
Ament & Henderson (2011)	Optimising resident education in cataract surgery	√								(Not suitable)	Article deals with resident education, not nursing	
Yuen, Clark, Jonathon, Ng, Morlet, Keeffe, Taylor & Preen (2010)	Further survey of Australian ophthalmologists' diabetic retinopathy management: did practice adhere to National Health and Medical Research Council guidelines?		√							(Not suitable)	Article about Diabetic Retinopathy	

Lindley (2009)	Is fasting required before cataract surgery?	√		√							Added to literature	Editorial
Noble, Somal, Gill & Lam (2009)	An analysis of undergraduate ophthalmology training in Canada									(Not suitable)	Article deals with training of medical students rather than nurses	
Keay, Lindsley, Tielsch, Katz & Schein (2009)	Routine preoperative medical testing for cataract surgery (Review)	√		√					√			
Chew, Lindblad & Clemons (2009)	Summary results and recommend-ations from the age-related eye disease study	√								Excluded	Article about age-related macular degeneration (AMD)	
Pritchard (2009)	Identifying and assessing anxiety in pre-operative patients			√		√					Used in literature review	Mixed method
Blaylock, Discepola, Faber, Hoar, Meyer & Peters (2009)	Getting to know the IQ ReSTOR IOL +3.0 D: Study results and clinical experience from the Canadian clinical investigators	√			√					(Not suitable)	Article deals with the best type of lenses to implant	
Briesen, Geneau, Roberts, Opiyo & Courtright (2010)	Understandin g why patients with cataract refuse free surgery: the influence of rumours in Kenya	√				√				Excluded	Article is not nursing related and doesn't meet outcomes	
Park, Ross, Tole,	Evaluation of a new	√		√	√	√				(Not suitable)	Article about surgical	

Sparrow, Penny & Mundasad (2009)	cataract surgery referral pathway										referrals	
Jacobs (2008)	Vitreous loss during cataract surgery: prevention and optimal management	√		√		√					Added to literature	
Sharma, Ooi, Figueira, Rosenberg, Masselos, Papalkar, Paramanathan, Francis, Alexander & Ferch (2008)	Patient perceptions of second eye clear corneal cataract surgery using assisted topical anaesthesia	√		√		√			√			
Müller, Murenzi, Mathenge, Munana & Courtright (2010)	Primary eye care in Rwanda: gender of service providers and other factors associated with effective service delivery	√								(Not suitable)	Article deals with training and supervision of health care workers	
Fayers, Abdullah, Walton & Wilkins (2009)	Impact of written and photographic instruction sheets on patient behaviour after cataract surgery	√			√			√	√			
Lockey (2009)	The provision of information for patients prior to cataract surgery	√		√		√			√			
Chan, Mahroo & Spalton (2010)	Complications of cataract surgery	√	√	√		√					Added to literature	
Ghosh & Kirkby	Posterior polar cataract	√								(Not suitable)	Article deals with surgical	

(2008)	surgery – a posterior segment approach										methods	
Hardy (2009)	Supporting patients undergoing cataract extraction surgery	√		√	√						Used in literature review	
Meszaros (2012)	Cataract surgery aids low vision: Visual acuity improved in most patients, as did self-reported functioning acuity	√		√	√						Added to literature	
Goldman, Kiffel & Weinstock (2009)	Cataract surgery and the primary care practitioner	√			√						Added to literature	
Modi, Shaw, Allman & Simcock (2008)	Local anaesthetic during cataract surgery: Factors influencing perception of pain, anxiety and overall satisfaction	√			√				√			
Moodie, Masood, Tint, Rubinstein & Vernon (2008)	Patients' attitudes towards trainee surgeons performing cataract surgery at a teaching hospital	√								Excluded	Related to consultant versus trainee	
Lockey & Ul-Hassan (2009)	Holistic approach to pre-operative assessment for cataract patients	√									Added to literature	

Tattersall & Sullivan (2008)	Audit of referrals for cataract extraction: are they appropriate?	√		√						Excluded	Doctor and optometrist related	
Lewallen & Thulasiraj (2010)	Eliminating cataract blindness: How do we apply lessons from Asia to sub-Saharan Africa?	√								Excluded	About the financial operative system	
McCloud, Harrington & King (2011)	Understandin g people's experience of vitreo-retinal day surgery: a Gadamerian-guided study		√		√	√		√			Qualitative	
Mittra, Kim, Han & Pollack (2009)	Sustained postoperative face-down positioning is unnecessary for successful macular hole surgery.		√		√		√		√			
Vasavada, Dixit, Ravat, Praveen, Shah, Vasavada, Vasavada & Trivedi (2009)	Intraoperative performance and postoperative outcomes of cataract surgery in infant eyes with microphthalm os	√			√					(Not suitable)	No nursing information	
Foster (2011)	Bilateral Patching in Retinal Detachment: Fluid Mechanics and Retinal "Settling"		√							Excluded	No nursing information	
Greenberg, Havnaer, Oetting & Garcia-	Cataract surgery practice patterns in	√			√					(Not suitable)	Focuses on ophthalmologi sts	

Ferrer (2012)	the United States Veterans' Health Administratio n											
Hughes (2012)	Charles Bonnet syndrome: a literature review into diagnostic criteria, treatment and implications for nursing practice									Excluded	Focuses on Charles Bonnet Syndrome	
Shukla, Daly & Legutko (2012)	Informed consent for cataract surgery: Patient understanding of verbal, written, and videotaped information	√		√		√			√			
van Vliet, Reus, Sermeus, Vissers, Sol & Lemij (2010)	Patients' experiences and preferences with co-managed care in a cataract pathway	√			√			√	√			
Walsgrave (2006)	Putting education into practice for pre-operative patient assessment			√						(Not suitable)	Published in 2006	
Watkinson (2009)	Visual impairment in older people	√		√	√	√		√				Used in literature review
Shah, Gajiwala & Pate (2009)	Infection control in cataract surgery	√			√					Excluded	Comment, not a study	

Polack, Eusebio, Mathenge, Wadud, Mamunur, Fletcher, Foster & Kuper (2010)	The impact of cataract surgery on health-related quality of life in Kenya, the Philippines, and Bangladesh	√			√			√		(Not suitable)	No nursing-related information	
Fredericks, Guruge, Sidani & Wan (2010)	Post-operative Patient Education: A Systematic Review						√			(Not suitable)	Not about ophthalmic care, general post-op	
Shah, Gilbert, Razavi, Turner & Lindfield (2011)	Preoperative visual acuity among cataract surgery patients and countries' state of development: a global study	√		√						(Not suitable)	About visual acuity, not nursing-related	
Dhiman, Dhiman, Puri & Ahuja (2010)	A comprehensive review of cataracts (Kaphaja linganasha) and its surgical treatment in Ayurvedic literature	√		√	√		√	√			Added to literature	
Colledge, Car, Donnelly & Majeed (2008)	Health information for patients: time to look beyond patient information leaflets							√			Added to literature	
Khanna, Pallerla, Eeda, Gudapati, Cassard, Rani, Shantha, Chakrabarti	Population-Based Outcomes of Cataract Surgery in Three Tribal Areas of Andhra	√								(Not suitable)	Study about surgical rate	

& Schein (2012)	Pradesh, India: Risk Factors for Poor Outcomes											
Thakur, Nakkeeran, Mukherjee & Yesudian (2008)	Evaluation of NGO involvement in the cataract control programme in India	√								Excluded	No information on care of patient	
Hickman, White & White (2010)	Illustrations as a Patient Education Tool to Improve Recall of Post-operative Cataract Medication Regimens in the Developing World	√			√			√	√			
Limburg, Silva & Foster (2009)	Cataracts in Latin America: findings from nine recent surveys	√								Excluded	Study looks at surgical rate	
Kuper, Polack, Eusebio, Mathenge, Wadud & Foster (2008)	A Case-Control Study to Assess the Relationship between Poverty and Visual Impairment from Cataracts in Kenya, the Philippines, and Bangladesh	√								(Not suitable)	No nursing information	

APPENDIX 2

Author and date	Chang, Congdon, Baker, Bloem, Savage & Sommer (2008)	Natchiar, Thulasiraj & Sundaram (2008)	Ament & Henderson (2011)	Noble, Somal, Gill & Lam (2009)
Aim of study	Information about the true cost of surgery, including costs of surgeon training, equipment, and patient outreach programs, is needed so that the goal of self-sustaining programs may be obtained.	Looks at cataract surgery over 20 years in Aravind Eye Hospital	Evaluates recent literature focusing on improving or assessing resident education in cataract surgery	To investigate the adequacy of undergraduate ophthalmology education in Canada in comparison with the International Council of Ophthalmology guidelines.
Study type	Review	Article	Review	Cross-sectional survey
Inclusion criteria	● Cataract burden and surgical backlog, ●Cost effectiveness and cost-control mechanism. ● Demand for cataract surgery, barriers to care and finding cases. ● Human resources and surgical coverage	● Cataract surgery at Aravind Eye Hospitals: 1988–2008	Not mentioned	● All first-year residents in Canadian, English-speaking, postgraduate training programs who had recently graduated from a Canadian medical school
Exclusion criteria				
Results of study	● Barriers to surgery vary by region, gender and education, but generally include direct and indirect costs, accessibility, and cultural beliefs. ● Many operations' research questions remain to be addressed, including various elements of the pre-operative and post-operative protocol.	● Increase in surgical rate	● Teaching cataract surgery remains a difficult task. Educators continue to focus on curriculum, assessment and complications. Resources for education are improving with the establishment of wet laboratories and development of surgical simulators.	
Additional				

Author and date	Ness, Kern & Frank (2011)	Yuen, Clark, Jonathon, Ng, Morlet, Keeffe, Taylor & Preen (2010)	Lindley (2009)	Chew, Lindblad & Clemons (2009)
Aim of study	Analyse retrospectively the endophthalmitis rate in our patients without pre- and postoperative antibiotic prophylaxis and discuss here the ESCRS guidelines in light of our results from an epidemiological and pharmacological perspective	To identify any changes in management trends over the last decade and provide information to guide the implementation of the revised guidelines, as well as establishing baseline data for future evaluation	To investigate whether fasting is required before cataract surgery	The ability of high-dose antioxidant vitamins to slow the development or progression of cataract and of high-dose antioxidant vitamins and zinc to slow the development of advanced AMD
Study type	Retrospective, consecutive case series	Cross-sectional survey	Editorial letter	Clinical trial
Inclusion criteria	● Medical and microbiological records of all patients who had undergone cataract surgery at the University Eye Hospital of Freiburg and who were diagnosed with postoperative endophthalmitis between January 1997 and December 2008 were reviewed. ● Presumed infectious endophthalmitis was suspected when a patient presented with pain or loss of vision likely due to infection after cataract surgery.	● Currently practising Australian ophthalmologists ● Australian Fellows of the Royal Australian and New Zealand College of Ophthalmologists		● Participants from 11 clinical centres between 1992 and 1998. Eligible participants had best corrected visual acuity of 20/32 or better in at least one eye and media sufficiently clear to obtain adequate quality stereoscopic fundus photographs.
Exclusion criteria	● Complicated cases			
Results of study	● Cataract surgery is one of the most common surgeries. Cataract surgery has a relatively low post-operative infection rate, but there is ongoing debate about the appropriate	● 80% of ophthalmologists always asked patients with diabetes about their blood glucose control. ● 53,5% of respondents consistently advised patients about the	● It is safe to perform cataract surgery under topical or infiltration anaesthesia and intravenous sedation without fasting before surgery.	● The AREDS design provided important information showing that, in people with few intermediate-sized drusen or extensive small drusen, there is such a low risk of developing advanced

	endophthalmitis prophylaxis. ● For more than a decade, only povidone-iodine 5% and gentamicin containing irrigating fluid as a prophylactic regimen, but no pre- or post-operative antibiotics were used at the University Eye Hospital of Freiburg. ● The overall endophthalmitis rate at the hospital from 1997 to 2008 was 0,6 per 1 000 cases. This rate lies within the range of many other studies.	importance of risk factor control in delaying retinopathy.		AMD that treatment targeting progression to advanced AMD is not warranted.
Additional			● The purpose of fasting is to reduce the risk of anaesthesia-related pulmonary aspiration of gastric contents and the consequent risk of aspiration pneumonia.	

Author and date	Keay, Lindsley, Tielsch, Katz & Schein (2009)	Pritchard (2009)	Sharma, Ooi, Figueira, Rosenberg, Masselos, Papalkar, Paramanathan, Francis, Alexander & Ferch (2008)	Müller, Murenzi, Mathenge, Munana & Courtright (2010)
Aim of study	● To investigate the evidence for reductions in adverse events through preoperative medical testing ● To estimate the average cost of performing routine medical testing	To identify and assess anxiety in pre-operative patients	To assess patient recall of intra-operative pain, anxiety, fear and sensory perceptions during second eye clear corneal cataract surgery, using assisted topical anaesthesia (ATA), in comparison with first eye cataract surgery using the same technique	To assess factors associated with high output of recently trained medical personnel in Rwanda
Study type	Intervention review	Article	Prospective, consecutive, observational study	
Inclusion criteria	● Randomised clinical trials ● individuals who required cataract surgery due to age-related cataract ● Trials in which routine pre-surgical, medical testing was compared to no routine pre-operative or selective pre-operative testing prior to cataract surgery ● Selective pre-operative medical testing was limited to health status questionnaires.	Not clear	● Patients undergoing first eye clear corneal cataract surgery using ATA (first surgery cohort) ● Those patients undergoing second eye surgery using ATA where the first eye had also been operated on using ATA (second surgery cohort)	● Nurses and village health workers from all health centres in Rubavu district were included.
Exclusion criteria	● Participants with congenital cataracts		● Surgery using block anaesthesia ● Patients who needed to be converted to ALA or who required general anaesthesia	

Results of study	● Preoperative medical testing in cataract surgery is not protective against medical adverse events. ● Pre-operative medical testing did not reduce the rate of intra-operative or post-operative medical adverse events compared to selective or no testing. ● Pre-operative testing might increase the burden on health care through the follow-up of unanticipated abnormalities, some of which may be minor or have limited clinical relevance. ● No evidence was found to suggest that pre-surgical medical testing leads to unnecessary delays or withholding of cataract surgery services. ● Routine pre-operative tests do not make an important contribution to patient management.	● The levels of anxiety that a patient experiences can affect his or her response to the anaesthetic and analgesia. It may also increase pain, cause depression, nausea and fatigue, and delay healing, which can impede the patient's discharge from hospital. ● It is vital that healthcare professionals actively manage patients' anxiety in the pre-operative period. This should involve early recognition and assessment of anxiety and the implementation of strategies to reduce patients' fears and concerns.	●Mean pain score for the first surgery cohort was 0,80 (range 0–4, of a reportable scale from 0 to 10), compared with 0,74 (range 0–5) for the second surgery cohort. ● Mean anxiety score for the first eye cohort was 1,10 (range 0–10), compared with 1,05 (range 0–8) for the second eye cohort. ● The mean fear score was lower in the second surgery cohort compared with the first surgery cohort, with scores of 0,42 (range 0–10) and 0,63 (range 0–6), respectively, but the difference again was not statistically significant (P=0.37).	● There was a wide range from none to all VHW referring people to a health centre. VHW brought more people to the health centre if there was a visiting ophthalmic clinical officer from the Eye Unit offering free screening.
Additional		Pre-op anxiety scales		● The major themes arising from the data collection and interviews were motivation of VHW to undertake community activities, limited expectations of abilities of nurses, satisfied patients to build community acceptance and gender as a factor in the use of eye care services.

Author and date	Blaylock, Discepola, Faber, Hoar, Meyer & Peters (2009)	Briesen, Geneau, Roberts, Opiyo & Courtright (2010)	Park, Ross, Tole, Sparrow, Penny & Mundasad (2009)	Jacobs (2008)
Aim of study	To understand the reasons that hinder people from uptake of sponsored cataract surgery	To understand the reasons that hinder people from uptake of sponsored cataract surgery	To compare the quality of referrals and listing rates of direct optometric referrals vs. traditional GP referrals for cataract surgery	To prevent and optimally manage vitreous loss during cataract surgery
Study type	Mixed method	Mixed method	Retrospective cohort	Symposium
Inclusion criteria	● During routine screening activities at Kwale District, Kenya, local residents with visually impairing cataract were clinically assessed and offered free surgery.	● Sample of Kwale inhabitants with operable cataract who presented at a screening during 2008● Willingness to participate and being visually impaired in at least one eye because of cataract	● Patients referred by GP or optometrist ● Notes obtained by consecutive case note selection for referrals from March to May 2006.	● Prevention ● Management of the patient, and by the surgeon
Exclusion criteria		● Patients with inoperable cataracts		● The minutiae of safe cataract surgery are outside the scope of this article.
Results of study	● Ninety interviews were conducted, 48 with people accepting and 42 with people refusing free surgery. Those who accepted surgery generally reported good outcomes in other patients, while people who refused surgery often reported to know someone who worsened or even became blind after surgery.	● A total of 90 people were interviewed, 42 who had refused surgery and 48 who had accepted surgery. ● Lack of social support from the family or from the community was the primary reason (54% of respondents) given for refusing surgery. ● Decisions influenced by others who have had eye surgery	● Optometric direct cataract referrals provide better information on measured vision and better delivery of pre-operative counselling. ● Rates of surgery were slightly higher with optometric referrals.	● Although vitreous loss in cataract surgery is associated with sight-threatening complications, including cystoid macular oedema and retinal detachment, the outcomes can be good. Ang38 reported a final best-corrected visual acuity of 6/12 or better in 84,4% of eyes after posterior capsule rupture in a district general hospital setting.
Additional		● Enhance the knowledge of eye diseases and treatment options		

		among the general population. ● Cataract surgery must be of high quality with good outcomes. ● Social support for the elderly must be enhanced. ● Eye care programmes must shift attention to improving knowledge in the community, transparency of their service and social support by the family and others.		

Author and date	Sharma, Ooi, Figueira, Rosenberg, Masselos, Papalkar, Paramanathan, Francis, Alexander & Ferch (2008)	Chan, Mahroo & Spalton (2010)	Ghosh & Kirkby (2008)	Moodie, Masood, Tint, Rubinstein & Vernon (2008)
Aim of study	To assess patient recall of intra-operative pain, anxiety, fear, and sensory perceptions during second eye clear corneal cataract surgery using assisted topical anaesthesia (ATA), in comparison with first eye cataract surgery using the same technique	To outline some of the more common intra-operative and post-operative complications and the management options that are available	To suggest a surgical approach that would pre-empt uncontrolled posterior capsular rupture and consequent posterior segment complications associated with posterior polar cataract surgery	To evaluate patients' preferences of surgeon to perform their cataract surgery if given a choice between consultant and trainee
Study type	Prospective, consecutive, observational study	Review	Interventional case series	
Inclusion criteria	● Patients undergoing first eye clear corneal cataract surgery using ATA (first surgery cohort) ● Those patients undergoing second eye surgery using ATA where the first eye had also been operated on using ATA (second surgery cohort)	● Clinical experience of researcher, discussions with colleagues and data presented at international conferences and from electronic literature searches performed on the PubMed database (accessed March 2010) focusing on the various topics discussed	● Between 2001 and 2003, 11 eyes of eight patients with congenital posterior polar cataracts were operated on by a single surgeon.	● 180 consecutive patients undergoing first eye cataract surgery in a large teaching hospital Eye Department from February to March 2006
Exclusion criteria	● Surgery using block anaesthesia ● Patients who needed to be converted to ALA or who required general anaesthesia			

Results of study	●Mean pain score for the first surgery cohort was 0,80 (range 0–4, of a reportable scale from 0 to 10), compared with 0,74 (range 0–5) for the second surgery cohort. ● Mean anxiety score for the first eye cohort was 1,10 (range 0–10), compared with 1,05 (range 0–8) for the second eye cohort. ● The mean fear score was lower in the second surgery cohort compared with the first surgery cohort, with scores of 0,42 (range 0–10) and 0,63 (range 0–6), respectively, but the difference again was not statistically significant (P=0,37).	Not mentioned	● Post-operative complications included one case of retinal detachment 2 months post-operatively and one patient had choroidal folds for three weeks owing to hypotony, which resolved spontaneously. ● The median-corrected pre-operative visual acuity was 6/12 and the same post-operatively was 6/6. ● The mean follow-up period was 13 months.	● Overall, 70% thought that trainee eye surgeons should operate as part of their training. Of these, 81% felt that they would be happy to be operated on by a trainee if supervised by a consultant. ● Approximately 30% of the patients felt that trainee eye surgeons should not operate as part of their training. This figure is similar to previously published studies.
Additional		● It is important to identify patients with higher risk factors to take the necessary steps to minimise complications. In the event of a complication, appropriate management often leads to favourable visual outcomes.	● This surgical technique offers a relatively controlled and predictable approach to posterior polar cataract surgery compared to others described in the literature. Although this technique is not without complications, the visual outcome is usually good.	●The study suggests that patients have a preference for their named consultant to perform their cataract operation over an ophthalmologist in training. ● Also, to ensure their named consultant will perform their operation, many would be prepared to wait longer.

Author and date	Fayers, Abdullah, Walton & Wilkins (2009)	Lockey (2009)	Lockey & Ul-Hassan (2009)	Tattersall & Sullivan (2008)
Aim of study	To evaluate the extent to which patients unnecessarily restrict activities of daily living post-operatively and to test interventions designed to improve post-operative activity	To measure the effectiveness of information against the level of patient satisfaction	To examine the vital nursing roles aimed at improving the quality and efficiency of the patient's 'journey'	To investigate the correlation between community cataract referral information and hospital ophthalmic opinion, in order to assess if the referrals for cataract extraction are appropriate. The secondary aim is to identify if any streamlining of the service is indicated.
Study type	Nonrandomised interventional clinical study	Clinical audit	Article	Audit
Inclusion criteria	● English speaking patients – patients were deemed to be sufficiently fluent if they could understand the consent process without the use of a translator	● All patients attending the post-cataract clinic during October and November 2008 were invited to participate. ● Convenience sampling was used, which involved selecting post-operative cataract patients, aged 54–92 years.	● Obtaining valid informed consent and performing biometry	● New patients were identified using the hospitals' electronic booking system, and the medical records of these patients were then examined. ● Initially, only the diagnosis was considered in order to filter the patients.
Exclusion criteria				
Results of study	● In all groups, the decision to avoid activities was self-directed more than 50% of the time; it was based on the advice of a nurse in 17% of cases and of a doctor in 4% of cases.	● The quality of information being given to patients is of an acceptable level. ● All patients received both verbal and written information and had the opportunity to discuss the risks and benefits of their surgery and their fears and anxieties with the assessment nurse. ● The results also suggest that patients identified the pre-operative	● Development has increased the professional knowledge of the ophthalmic nursing team and helped to improve patient outcomes by providing verbal and written information, thereby reducing patients' fears and anxieties and improving the overall patient 'journey'.	● During the two-week period, 179 new patients were referred to the hospital ophthalmology department. ● It appears that the majority of inappropriate referrals have resulted from the optometrist either: not questioning the patient appropriately, not documenting correctly or referring patients too early with no consideration of the cataract's effect on the

		assessment nurse as the main source of information; this is possibly due to the time taken in explaining and discussing cataract surgery, compared with the doctor whose time is often limited due to clinical workload.		patient's quality of life. This area of the referral system needs to be addressed in order to cut down on the number of inappropriate referrals.
Additional	● Many patients unnecessarily avoided activities of daily living after cataract surgery. Providing an additional written sheet did not significantly improve this, whereas a photograph sheet did. ● Better awareness of the safety and rapid rehabilitation after modern cataract surgery is needed in hospitals and primary care centres.	● Although the provision of information is an essential role of the nurse, such extensive teaching is part of the specialised role of nurse-led pre-operative assessment, entailing a great deal of responsibility and ensuring patient satisfaction. ● The following recommendations can be made: if nurses are to meet the challenges of managing patients prior to cataract surgery, they must be able to demonstrate in their planning and implementation that they have knowledge and skills in several areas. ● This audit takes some steps towards substantiated the argument that, if properly supported and implemented, nurse-led initiatives can produce tangible benefits in terms of an improved patient experience, greater job satisfaction and	● The holistic assessment process helps to ensure effective and safe evidence-based practice, supported by a flexible approach to meeting patients' needs and delivering quality care.	

		increased efficiency within the organisation.		

Author and date	Hardy (2009)	Meszaros (2012)	Goldman, Kiffel & Weinstock (2009)	Modi, Shaw, Allman and Simcock (2008)
Aim of study	To provide knowledge of the causes, symptoms and treatment of cataracts	Is cataract extraction with IOL implantation beneficial in patients with low vision, and how does one quantify or qualify improvement in patients?	To review pertinent issues surrounding the decision to operate	To consider our patients' experience of cataract surgery in terms of pain, anxiety and their overall satisfaction, and to determine whether the measures we have in place are effective.
Study type	Article	Pilot study	Review	Audit
Inclusion criteria	● Information on cataracts pertaining to nurses	● All patients were referred to Dr Kuo from a low vision clinic for surgical evaluation. ● Thirty patients were referred to Dr Kuo, 22 consented to surgery, and 20 underwent surgery. ● These were patients who had at least moderate cataracts and at least moderate AMD (age-related macular degeneration).	● Intr-aocular lens implants ● Intra-operative & post-operative complications ● Geriatric patients: special considerations	● All patients having routine local anaesthetic, day-case cataract surgery over a three month period.
Exclusion criteria				
Results of study	● A basic understanding of the patient's experience of treatment will enable nurses working in both hospital and community settings to support those in their care who have been diagnosed with cataracts.	● The majority of patients in the study found cataract surgery to be beneficial and would consent to it again.	● Vision compromised by cataracts is a common problem in the geriatric population. Modern cataract surgery provides restoration of excellent functional vision in more than 95% of cases. However, communication between patients,	● The audit data indicated that pain, anxiety and satisfaction with local anaesthetic daycase cataract surgery at the Royal Devon and Exeter is comparable (within one standard deviation) to that found in the Misericordia Cataract Comfort Study.

			their primary care physicians, and ophthalmologists helps improve the safety and satisfaction in the results of surgery.	
Additional		● In the future, Dr. Kuo plans to develop a validated instrument to determine what activities, abilities, and perceptions would likely change after cataract surgery.		

Author and date	McCloud, Harrington & King (2011)	Mittra, Kim, Han & Pollack (2009)	Vasavada, Dixit, Ravat, Praveen, Shah,Vasavada, Vasavada & Trivedi (2009)	Foster (2011)
Aim of study	To co-create an understanding between the researchers and the participants of the experience of vitreo-retinal day surgery	To determine the rate of successful macular hole closure with one-day post-operative prone positioning	To report the intra-operative performance and post-operative outcomes in microphthalmic eyes of infants younger than one year old having bilateral cataract surgery	To look at bilaterally patching the patient to allow the retina to partially re-attach or 'settle'.
Study type	Report	Review	Observational study	Article
Inclusion criteria	● A purposive sample of eleven men and seven women, aged between 45 and 87 years of age was recruited between July 2006 and December 2007. ● Participants who experienced at least one episode of VR day surgery in the previous three months, over 18 years of age, able to speak English and lived within a 50 km radius of the healthcare facility.	● Consecutive cases in which one-day post-operative positioning was employed during the study period were included in the study. ● All stages and sizes of macular hole were eligible.	● Eyes of infants younger than 1 yearold with microphthalmos who had bilateral congenital cataract surgery between January 2003 and June 2006	(Not specified)
Exclusion criteria			● Ocular trauma, inflammation, posterior persistent foetal vasculature causing stretching of the ciliary processes or tractional retinal detachment, aniridia, or chorioretinal coloboma	

Results of study	● A broad understanding of the data revealed both positive and negative participant experiences. Positive experiences were more frequent in participants who had elective and generally curative surgery. Negative experiences illuminated inadequacies of care and unmet needs when complex and ongoing pathology was present.	● The final hole closure was achieved in 93% of eyes. ● This study demonstrates that one-day post-operative positioning with use of long-acting gas tamponade results in a 93% initial hole closure rate in this series of stage 3 and 4 holes with no attendant increase in complications.	● Surgery was performed using the limbal approach in 71,4% and by pars plicata lensectomy in 28,6%. At the final follow-up, visual acuity remained stable in 9,5% of eyes and was improved in 90,5% of eyes.	● It was found that by coupling fluid mechanics with structural mechanics, a physically consistent explanation of increased retinal detachment with eye movements can be found in the case of traction on the retinal hole. Large eye movements increase vitreous traction and detachment forces on the edge of the retinal hole, creating a sub-retinal vacuum and facilitating increased sub-retinal fluid.
Additional	● The identified complex needs of individuals should inform nurses planning V-R day surgery care with the potential to improve patient experiences. ● Pain management strategies that are successful and easy for patients to self-manage need to be urgently developed. ● Research aimed to explore interventions to meet the psychological needs of individuals experiencing V-R day surgery should become a priority.	● The shorter positioning time was extremely well received by the patients. ● The authors believe this pilot study provides valuable clinical information for patients and physicians, and adds to the literature that supports the findings that high rate of anatomical success can be achieved with very limited prone positioning.	● The results suggest that good visual outcomes can be obtained in microphthalmic patients with bilateral congenital cataracts after early surgical intervention, with an acceptable rate of serious post-operative complications.	● The results of these simulations explain the physical principles behind bilateral patching and provide insight that can be used clinically.

Author and date	Lewallen & Thulasiraj (2010)	Greenberg, Havnaer, Oetting & Garcia-Ferrer (2012)	Hughes (2012)	Shukla, Daly & Legutko (2012)
Aim of study	To explore the factors that lead to success at Aravind, and compare and contrast the conditions in India with those found in much of sub-Saharan Africa	To document current cataract surgery practice patterns of ophthalmologists in the United States Veterans Health Administration	To consider the current understanding of Charles Bonnet syndrome, its treatment and the role of mental health nurses	To determine the effectiveness of verbal, written and videotaped descriptions of cataract surgery on patients' understanding of the risks, benefits, and treatment alternatives
Study type	Review	Article	Review	Randomised prospective study
Inclusion criteria	● Elements to success at Aravind ● Management skills	● Members of the Association of Veterans Affairs Ophthalmologists (AVAO)	●Literature from CINAHL, Medline and Cochrane Review databases. ● Age limits set to over 65 years and the date range from 2002 to present ● Language was selected as English.	● Patients at the Veterans Affairs Boston Healthcare System being considered for cataract surgery were offered the opportunity to participate.
Exclusion criteria				
Results of study	● While the underlying principles of the Aravind model high productivity, standardisation, patient-centred care and a rigorous quality assurance process are very relevant in the African context, there are also some factors that are very different from those in India that will probably always limit the applicability of the Aravind model.	● The response rate was 53%. ● Eighty-nine per cent of the respondents performed cataract surgery. ● Common practices among them included partial coherence interferometry for biometry 81%, topical anesthesia 57%, clear corneal incisions 91% and acrylic single-piece intra-ocular lens (IOL) implantation 97%.	● The two main findings of the review are that despite a long recognition of the syndrome, diagnostic criteria are not established and that there is no recognised evidence-based medical treatment.	● Patients in Group 2 (conventional verbal information plus second-grade reading level brochure) and Group 4 (conventional verbal information plus American Academy of Ophthalmology DVD Understanding Cataract Surgery: Patient Education DVD Featuring an Aid to Informed Consent) scored significantly higher.
Additional	There is a need to develop an 'African Model', which can achieve high productivity in populations with low density and lower cataract occurrence, developing a cost-effective delivery system		● Current best practice is identified as identifying the condition and providing reassurance and education, a role that mental health nurses who are aware of Charles Bonnet syndrome can fulfil	● Concise informed consent information sheets at lower reading grade levels and videotape presentation optimised patient understanding of the risks, benefits and treatment alternatives to cataract surgery. The

	in the face of poor roads and public transportation infrastructure.		perhaps better than any other discipline.	cost–benefit of these results is important because better patient understanding has the potential to decrease the risk for indemnity payments awarded because of inadequate informed consent.

Author and date	van Vliet, Reus, Sermeus, Vissers, Sol & Lemij (2010)	Fredericks, Guruge, Sidani & Wan (2010)	Shah, Gilbert, Razavi,Turnerb & Lindfield (2011)	Dhiman, Dhiman, Puri & Ahuja (2010)
Aim of study	To determine experiences and preferences of cataract patients with co-managed post-operative care	To address clinically relevant questions: Who would most benefit from post-operative education, given in what approach and mode, and at what dose?	To describe the pre-operative surgical case mix among patients undergoing cataract extraction and to explore associations between case mix, country level of development (as measured by the Human Development Index (HDI) and cataract surgery rates (CSRs)	To review the literature on Kaphaja linganasha and cataracts to establish their relation to each other
Study type	Nested-case control study	Systematic review	Unknown	Review
Inclusion criteria	● Only patients who underwent uncomplicated first-eye cataract surgery and did not have any ocular comorbidity	● The sample represented adult patients who underwent surgery. ● The educational intervention involved the provision of self-care information following surgery prior to discharge from hospital. ● The outcomes assessed were related to self-care knowledge, self-care behavior and symptom experience. ● The study report was published in English between 1986 and 2007.	● 1. Alumni of the Masters in Community Eye Health programme at the London School of Hygiene & Tropical Medicine 2. Regional representatives of the International Agency for the Prevention of Blindness (IAPB), directors of international non-governmental organisations involved in eye care and staff at the International Centre for Eye Health were asked for contacts. 3. An advertisement was placed in the	● Classical literature on the subject from Ayurvedic and western system of medicine ● The help of Sanskrit grammar scholars

		Studies that used experimental or randomised clinical trial and quasi-experimental designs involving two groups (experimental and comparison) were included in the systematic review.	Community Eye Health Journal.	
Exclusion criteria		● Studies assessing the effectiveness of a combined pre- and post-operative educational intervention		
Results of study	●Patients in the co-managed care pathway reported similarly good experiences with the quality of care as patients who received their reviews by an ophthalmologist. ● Patients who were reviewed by a nurse reported preferring the same first-day review method significantly more often than those who were reviewed by an ophthalmologist.	● The results of this systematic review showed larger effect sizes for post-operative patient education in which the content was individualised and given in a combination of media on an individual basis and in more than one session.	● In 2008 a median of 1 700 cataract procedures were performed per hospital. ● Each eye hospital had a median of two surgeons interquartile range (IQR: 3–8) and over one third of all surgeons (38%) had performed more than 750 cataract procedures in 2008. ● Overall, 72% of the eyes undergoing surgery had a visual acuity (VA) < 6/60. Very low VA before cataract surgery was strongly associated with poor development at the country level and inversely associated with national cataract surgery rate CSR.	● A detailed and critical account related to post-operative care & management of various complications (if arising) of cataract surgery has been given in Ayurveda literature.

Additional	● Overall, patients with cataracts highly rated co-managed care pathways without any post-operative contact with ophthalmologists.	● This design of educational intervention was beneficial in that it produced moderate improvement in self-care knowledge and performance of self-care behaviour and decline in the number of post-operative symptoms experienced.	● The proportion of patients with very poor pre-operative VA is a simple indicator that can be easily measured periodically to monitor progress in ophthalmological services. Additionally, the Internet can be an effective tool for developing and supporting an ophthalmological research network capable of providing a global snapshot of service activity, particularly in developing countries.	● A comprehensive and systematic account of pre-operative preparation, operative technique and post-operative care of the patients and the surgical wound has been given by the surgeons of ancient times.

Author and date	Walsgrave (2006)	Watkinson (2009)	Shah, Gajiwala & Pate (2009)	Polack, Eusebio, Mathenge, Wadud, Mamunur, Fletcher, Foster & Kuper (2010)
Aim of study	To offer an educational framework for nurses at different levels of practice in pre-operative assessment POA	To discuss the nurse's role in the treatment and management of three main ocular conditions that cause visual impairment in older people: Cataract, Age-related macular degeneration and chronic open angle glaucoma	To discuss the infection control in cataract surgery	To assess the impact of cataract surgery on vision related to quality of life (VRQoL) and generic health related quality of life (HRQoL) in Kenya, Bangladesh and the Philippines
Study type	Article	Article	Comments	Multi-centre intervention study
Inclusion criteria	● Management of clinics, patient assessment, information-giving and education of staff	● Cataract ● Age-related macular degeneration ● Chronic open angle glaucoma	● Infection control rates ● How patient get infected ● How to reduce post-operative infection in eye surgery	● Cases were surveyed with participants aged ≥ 50 years, with pinhole corrected VA < 6/24 in the better eye from cataract. ● For each case identified in the survey, one (up to two in Bangladesh) age-, gender- and cluster-matched controls without visual impairment (VA < 6/24) from cataract were selected.
Exclusion criteria				
Results of study	● Anecdotal evidence demonstrates that the programme provides a successful model for supporting the education and training of POA nurses in the local area.	● Early diagnosis and prompt treatment are instrumental in improving or preserving sight in the longer term and promoting a better quality of life.	● Revise the infection control guidelines under the national programme. ●Spread information among all the players in the country - larger level action. ● Add infection control as a separate subject in the medical curriculum. ● Increase quality consciousness by conducting workshops and training programmes for all	● This study found that one year after cataract surgery there were large, significant improvements in perception of own eyesight, reduced difficulty undertaking everyday activities (general functioning) and reduced frequency of negative psychosocial experiences associated with vision.

			categories of staff. ● Enforce implementation of the guidelines through various supervisory inputs.	
Additional	● The interest that has been shown in the POA competency portfolio from across the UK suggests there is a need to develop similar frameworks elsewhere and that a move towards a national programme might be worth considering.	● Nurses play an important role as health educators, providing older people with relevant information, help and support to regain sufficient control over the management of their visual problems to maintain self-esteem, confidence and re-establish quality of life.		

Author and date	Khanna, Pallerla, Eeda, Gudapati, Cassard, Rani, Shantha, Chakrabarti & Schein (2012)	Thakur, Nakkeeran, Mukherjee & Yesudian (2008)	Hickman, White & White (2010)	Limburg, Silva & Foster (2009)
Aim of study	To report visual outcomes and risk factors for poor outcomes of cataract surgery in three Integrated Tribal Development Agency (ITDA) areas of Andhra Pradesh, India	To present findings of the evaluation of performance of non-governmental organisations (NGOs) under the World Bank Assisted Cataract Blindness Control Project in India	To assess the impact of medication frequency illustrations in patient education for use in the developing world	To review recent data on blindness and low vision due to cataract in Latin America
Study type	Validated Rapid Assessment of Avoidable Blindness (RAAB) methodology	Unknown	Randomised controlled trial	Review
Inclusion criteria	● Subjects aged 50 years or older ● Data was collected from the last week of July to September 2009.	● 15 NGOs were covered in states of Maharashtra, Andhra Pradesh and Tamil Nadu. ● Study was conducted in base hospitals and their hinterlands in 2002-2003.	● Patients undergoing cataract surgery in St-Louis du Nord, Haiti	● Patients aged 50 years and older ● Selection of the survey area was determined by the local non-governmental organisation (NGO) or university initiating the survey, usually based on a particular research interest in the respective areas.
Exclusion criteria				
Results of study	● During the study period, 7 500 subjects were enumerated in three tribal zones and 7 281 (97,1%) were examined. One thousand, one hundred and twenty-four subjects had undergone cataract surgery, yielding an overall prevalence of 15,4%. ● Overall, refractive error, uncorrected aphakia, surgical complications and posterior segment disorders were the major causes of VI and blindness.	● Successful models developed by grantee NGOs should have good geographical camp coverage, better planning, efficient and effective utilisation of resources. The reasons for poor performing NGOs were poor geographical coverage, unavailability of skilled manpower, poor follow up services, etc.	● 85,5% of the subjects returned for follow-up as instructed on post-operative day one. Subjects in the illustration group had significantly better recall of the morning and bedtime doses. The illustration group also tended to have better recall of the mid-day and afternoon doses. Within the oral group, family members had significantly better recall of the afternoon and bedtime doses than patients.	● Cataract was the main cause of all blindness in eight of the nine surveys. ● Cataract surgical coverage was good in Campinas, Brazil; low in Paraguay, Peru, and Guatemala; and moderate in the other areas. Good visual outcome after cataract surgery nearly conformed to World Health Organization (WHO) guidelines in Buenos Aires (more than 80% of operated eyes able to see 20/60 or better), but ranged from 60% to 79% in

				most of the other settings, and was less than 60% in Guatemala and Peru.
Additional	● The overall prevalence of cataract surgery was much higher than that reported from India a decade ago and is relatively higher compared to neighboring and some developed countries.	● It may be concluded that the Camp Approach linked to Base hospitals is quite efficacious for countering the problem of cataract. This approach is culminating to the combination of peoples' initiative from the grass roots to the global drives and institutions.	The illustrations did appear to be useful in providing patients and their families with education regarding their post-operative medication regimen. Education of family members also appears to be an important adjunct, as they tended to have better recall than the patients themselves. Illiteracy is a common problem throughout the developing and developed world, and illustrations may be an effective method to overcome this barrier to patient compliance. Even in the developed world, there is evidence to suggest that an alarming number of patients do not possess sufficient reading skills to comprehend instructions for medications.	The average number of cataract operations per eye surgeon per year in the nine Latin American countries surveyed ranged from 18 to 65. This is low compared to many other regions. The number of available eye surgeons suggests there is sufficient capacity to increase the number of cataract operations per year and thus reduce the prevalence of blindness and low vision caused by cataract.

Author and date	Colledge, Car, Donnelly & Majeed (2008)	Kuper, Polack, Eusebio, Mathenge, Wadud & Foster (2008)
Aim of study	To discuss health information provision and what can be done to improve health communication	To examine the association between visual impairment from cataract and poverty in adults in Kenya, Bangladesh, and the Philippines
Study type	Essay	Population-based case-control study
Inclusion criteria	● Why do we need health literate patients? ● Access to information ● What can health professionals do?	● Patients aged 50 years or older and visually impaired due to cataract (visual acuity , 6/24 in the better eye) ● Households within clusters were selected through a modification of compact segment sampling, whereby a map was drawn of the enumeration area that was divided into segments, each including approximately 50 people aged 50 years, and one segment was chosen at random.
Exclusion criteria		
Results of study	● Different formats of health information effective at improving patient outcomes ● Health professionals can actively guide and support patients to access and engage with high quality sources of information, as well as developing strategies to improve their own communication.	● Case participants were more likely to be in the lowest quartile of per capita expenditure (PCE) compared to controls in Kenya, Bangladesh, and the Philippines and there was significant dose-response relationship across quartiles of PCE. These associations

		persisted after adjustment for self-rated health and social support indicators.
Additional		This study confirms an association between poverty and blindness and highlights the need for increased provision of cataract surgery to poor people, particularly since cataract surgery is a highly cost-effective intervention in these settings.

APPENDIX 3

3A Fayers, Abdullah, Walton & Wilkins (2009)

QUALITY ASSESSMENT TOOL FOR QUANTITATIVE STUDIES

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COMPONENT RATING

A) SELECTION BIAS

(Q1) Are the individuals selected to participate in the study likely to be representative of the target population?

1. Very likely
2. Somewhat likely
3. Not likely
4. Can't tell

(Q2) What percentage of selected individuals agreed to participate?

1. 80 -100% agreement
2. 60 – 79and agreement
3. Less than 60% agreement
4. Not applicable
5. Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

B) STUDY DESIGN

Indicate the study design

1. Randomized controlled trial
2. Controlled clinical trial
3. Cohort analytic (two group pre + post)
4. Case-control
5. Cohort (one group pre + post (before + after))
6. Interrupted time series
7. Other specify nonrandomized interventional clinical
8. Can't tell

Was the study described as randomized? If NO, go to Component C.

NO YES

If Yes, was the method of randomization described? (See dictionary)

NO YES

If Yes, was the method appropriate? (See dictionary)

NO YES

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

C) CONFOUNDERS

(Q1) Were there important differences between the groups prior to the intervention?

1. Yes
2. No
3. Can't tell

The following are examples of confounders:

1. Race
2. Sex
3. Marital status/family
4. Age
5. SES (income or class)
6. Education
7. Health status
8. Pre-intervention score on outcome measure

(Q2) If yes indicate the percentage of relevant confounders that were controlled (either in the design (eg. stratification, matching) or analysis)?

1. 80 – 100% (most)
2. 60 – 79% (some)
3. Less than 60% (few or none)
4. Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

D) BLINDING

(Q1) Was (were) the outcome assessor(s) aware of the intervention or exposure status of the participants?

1. Yes
2. No
3. Can't tell

(Q2) Were the study participants aware of the research question?

1. Yes
2. No
3. Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

E) DATA COLLECTION METHODS

(Q1) Were data collection tools shown to be valid?

1. Yes

2. No
3. Can't tell

(Q2) Were data collection tools shown to reliable?

1. Yes
2. No
3. Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

F) WITHDRAWALS AND DROP-OUTS

(Q1) Were withdrawals and drop-outs reported in terms of numbers and/or reasons per group?

1. Yes
2. No
3. Can't tell
4. Not applicable (i.e. one time surveys or interviews)

(Q2) Indicate the percentage of participants completing the study. (If the percentage differs by groups, record the lowest).

1. 80 -100%
2. 60 - 79%
3. Less than 60%
4. Can't tell
5. Not applicable (i.e. Retrospective case-control)

RATE THIS SECTION	STRONG	MODERATE	WEAK	NOT APPLICABLE
See dictionary	1	2	3	N/A

G) INTERVENTION INTEGRITY

(Q1) What percentage of participants received the allocated intervention or exposure of interest?

1. 80 -100%
2. 60 - 79%
3. Less than 60%
4. Can't tell

(Q2) Was the consistency of the intervention measured?

1. Yes
2. No
3. Can't tell

(Q3) Is it likely that subjects received an unintended intervention (contamination or co-intervention) that may influence the result?

4. Yes
5. No

6. Can't tell

H) ANALYSES

(Q1) Indicate the unit of allocation (circle one)

Community organization/institution practice/office individual

(Q2) Indicate the unit of analysis (circle one)

Community organization/institution practice/office individual

(Q3) Are the statistical methods appropriate for the study design?

1. Yes
2. No
3. Can't tell

(Q4) Is the analysis performed by intervention allocation status (i.e. intention to treat) rather than the actual intervention received?

1. Yes
2. No
3. Can't tell

GLOBAL RATING

COMPONENT RATINGS

Please transcribe the information from the gray boxes on page 1-4 onto this page. See dictionary on how to rate this section.

A	**SELECTION BIAS**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
B	**STUDY DESIGN**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
C	**CONFOUNDERS**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
D	**BLINDING**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
E	**DATA COLLECTION METHOD**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
F	**WITHDRAWALS AND DROPOUTS**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	Not Applicable

GLOBAL RATING FOR THIS PAPER (circle one):

1. STRONG (no WEAK ratings)
2. MODERATE (no WEAK ratings)
3. WEAK (two or more WEAK ratings)

With both reviewers discussing the ratings:

Is there a discrepancy between the two reviewers with respect to the component (A-F) ratings?

NO YES

If yes, indicate the reason for the discrepancy

1. Oversight
2. Differences in interpretation of criteria
3. Differences in interpretation of study

Final decision of both reviewers (circle one):

1. STRONG
2. MODERATE
3. WEAK

3B Hickman, White & White (2010)

QUALITY ASSESSMENT TOOL FOR QUANTITATIVE STUDIES

COMPONENT RATING

A) SELECTION BIAS

(Q1) Are the individuals selected to participate in the study likely to be representative of the target population?

1. Very likely
2. Somewhat likely
3. Not likely
4. Can't tell

(Q2) What percentage of selected individuals agreed to participate?

1. 80 -100% agreement
2. 60 – 79and agreement
3. Less than 60% agreement
4. Not applicable
5. Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

B) STUDY DESIGN

Indicate the study design

1. Randomized controlled trial
2. Controlled clinical trial
3. Cohort analytic (two group pre + post)
4. Case-control
5. Cohort (one group pre + post (before + after))
6. Interrupted time series
7. Other specify
8. Can't tell

Was the study described as randomized? If NO, go to Component C.

NO YES

If Yes, was the method of randomization described? (See dictionary)

NO YES

If Yes, was the method appropriate? (See dictionary)

NO YES

RATE THIS SECTION	STRONG	MODERATE	WEAK

See dictionary	1	2	3

C) CONFOUNDERS

(Q1) Were there important differences between the groups prior to the intervention?

1. Yes
2. No
3. Can't tell

The following are examples of confounders:

1. Race
2. Sex
3. Marital status/family
4. Age
5. SES (income or class)
6. Education
7. Health status
8. Pre-intervention score on outcome measure

(Q2) If yes indicate the percentage of relevant confounders that were controlled (either in the design (eg. stratification, matching) or analysis)?

1. 80 – 100% (most)
2. 60 – 79% (some)
3. Less than 60% (few or none)
4. Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

D) BLINDING

(Q1) Was (were) the outcome assessor(s) aware of the intervention or exposure status of the participants?

1. Yes
2. No
3. Can't tell

(Q2) Were the study participants aware of the research question?

1. Yes
2. No
3. Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

E) DATA COLLECTION METHODS

(Q1) Were data collection tools shown to be valid?

1. Yes
2. No
3. Can't tell

(Q2) Were data collection tools shown to reliable?

1. Yes
2. No
3. Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

F) WITHDRAWALS AND DROP-OUTS

(Q1) Were withdrawals and drop-outs reported in terms of numbers and/or reasons per group?

1. Yes
2. No
3. Can't tell
4. Not applicable (i.e. one time surveys or interviews)

(Q2) Indicate the percentage of participants completing the study. (If the percentage differs by groups, record the lowest).

1. 80 -100%
2. 60 - 79%
3. Less than 60%
4. Can't tell
5. Not applicable (i.e. Retrospective case-control)

RATE THIS SECTION	STRONG	MODERATE	WEAK	NOT APPLICABLE
See dictionary	1	2	3	N/A

G) INTERVENTION INTEGRITY

(Q1) What percentage of participants received the allocated intervention or exposure of interest?

1. 80 -100%
2. 60 - 79%
3. Less than 60%
4. Can't tell

(Q2) Was the consistency of the intervention measured?

1. Yes
2. No
3. Can't tell

(Q3) Is it likely that subjects received an unintended intervention (contamination or co-intervention) that may influence the result?

1. Yes
2. No
3. Can't tell

H) ANALYSES

(Q1) Indicate the unit of allocation (circle one)

Community organization/institution practice/office individual

(Q2) Indicate the unit of analysis (circle one)

Community organization/institution practice/office individual

(Q3) Are the statistical methods appropriate for the study design?

1. Yes
2. No
3. Can't tell

(Q4) Is the analysis performed by intervention allocation status (i.e. intention to treat) rather than the actual intervention received?

1. Yes
2. No
3. Can't tell

GLOBAL RATING

COMPONENT RATINGS

Please transcribe the information from the gray boxes on page 1-4 onto this page. See dictionary on how to rate this section.

A	**SELECTION BIAS**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
B	**STUDY DESIGN**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
C	**CONFOUNDERS**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
D	**BLINDING**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
E	**DATA COLLECTION METHOD**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
F	**WITHDRAWALS AND DROPOUTS**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	Not Applicable

GLOBAL RATING FOR THIS PAPER (circle one):

1. STRONG (no WEAK ratings)
2. MODERATE (no WEAK ratings)
3. WEAK (two or more WEAK ratings)

With both reviewers discussing the ratings:

Is there a discrepancy between the two reviewers with respect to the component (A-F) ratings?

NO YES

If yes, indicate the reason for the discrepancy

1. Oversight
2. Differences in interpretation of criteria
3. Differences in interpretation of study

Final decision of both reviewers (circle one):

1. STRONG
2. MODERATE
3. WEAK

3C Keay, Lindsley, Tielsch, Katz & Schein (2009)

QUALITY ASSESSMENT TOOL FOR QUANTITATIVE STUDIES

COMPONENT RATING

A) SELECTION BIAS

(Q1) Are the individuals selected to participate in the study likely to be representative of the target population?

1. Very likely
2. Somewhat likely
3. Not likely
4. Can't tell

(Q2) What percentage of selected individuals agreed to participate?

1. 80 -100% agreement
2. 60 – 79and agreement
3. Less than 60% agreement
4. Not applicable
5. Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

B) STUDY DESIGN

Indicate the study design

1. Randomized controlled trial
2. Controlled clinical trial
3. Cohort analytic (two group pre + post)
4. Case-control
5. Cohort (one group pre + post (before + after))
6. Interrupted time series
7. Other specify: Cochrane Review
8. Can't tell

Was the study described as randomized? If NO, go to Component C.

NO YES

If Yes, was the method of randomization described? (See dictionary)

NO YES

If Yes, was the method appropriate? (See dictionary)

NO YES

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

C) CONFOUNDERS

(Q1) Were there important differences between the groups prior to the intervention?

1. Yes
2. No
3. Can't tell

The following are examples of confounders:

1. Race
2. Sex
3. Marital status/family
4. Age
5. SES (income or class)
6. Education
7. Health status
8. Pre-intervention score on outcome measure

(Q2) If yes indicate the percentage of relevant confounders that were controlled (either in the design (eg. stratification, matching) or analysis)?

1. 80 – 100% (most)
2. 60 – 79% (some)
3. Less than 60% (few or none)
4. Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

D) BLINDING

(Q1) Was (were) the outcome assessor(s) aware of the intervention or exposure status of the participants?

1. Yes
2. No
3. Can't tell

(Q2) Were the study participants aware of the research question?

1. Yes
2. No
3. Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

E) DATA COLLECTION METHODS

(Q1) Were data collection tools shown to be valid?

1. Yes
2. No
3. Can't tell

(Q2) Were data collection tools shown to reliable?

1. Yes
2. No
3. Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

F) WITHDRAWALS AND DROP-OUTS

(Q1) Were withdrawals and drop-outs reported in terms of numbers and/or reasons per group?

1. Yes
2. No
3. Can't tell
4. Not applicable (i.e. one time surveys or interviews)

(Q2) Indicate the percentage of participants completing the study. (If the percentage differs by groups, record the lowest).

1. 80 -100%
2. 60 - 79%
3. Less than 60%
4. Can't tell
5. Not applicable (i.e. Retrospective case-control)

RATE THIS SECTION	STRONG	MODERATE	WEAK	NOT APPLICABLE
See dictionary	1	2	3	N/A

G) INTERVENTION INTEGRITY

(Q1) What percentage of participants received the allocated intervention or exposure of interest?

1. 80 -100%
2. 60 - 79%
3. Less than 60%
4. Can't tell

(Q2) Was the consistency of the intervention measured?

1. Yes
2. No
3. Can't tell

(Q3) Is it likely that subjects received an unintended intervention (contamination or co-intervention) that may influence the result?

1. Yes
2. No
3. Can't tell

H) ANALYSES

(Q1) Indicate the unit of allocation (circle one)

Community organization/institution practice/office individual

(Q2) Indicate the unit of analysis (circle one)

Community organization/institution practice/office individual

(Q3) Are the statistical methods appropriate for the study design?

1. Yes
2. No
3. Can't tell

(Q4) Is the analysis performed by intervention allocation status (i.e. intention to treat) rather than the actual intervention received?

1. Yes
2. No
3. Can't tell

GLOBAL RATING

COMPONENT RATINGS

Please transcribe the information from the gray boxes on page 1-4 onto this page. See dictionary on how to rate this section.

A	**SELECTION BIAS**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
B	**STUDY DESIGN**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
C	**CONFOUNDERS**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
D	**BLINDING**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
E	**DATA COLLECTION METHOD**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
F	**WITHDRAWALS AND DROPOUTS**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	Not Applicable

GLOBAL RATING FOR THIS PAPER (circle one):

1. STRONG (no WEAK ratings)
2. MODERATE (no WEAK ratings)
3. WEAK (two or more WEAK ratings)

With both reviewers discussing the ratings:

Is there a discrepancy between the two reviewers with respect to the component (A-F) ratings?

NO YES

If yes, indicate the reason for the discrepancy

1. Oversight
2. Differences in interpretation of criteria
3. Differences in interpretation of study

Final decision of both reviewers (circle one):

1. STRONG
2. MODERATE
3. WEAK

3D Lockey (2009)

QUALITY ASSESSMENT TOOL FOR QUANTITATIVE STUDIES

COMPONENT RATING

A) SELECTION BIAS

(Q1) Are the individuals selected to participate in the study likely to be representative of the target population?

1. Very likely
2. Somewhat likely
3. Not likely
4. Can't tell

(Q2) What percentage of selected individuals agreed to participate?

1. 80 -100% agreement
2. 60 – 79and agreement
3. Less than 60% agreement
4. Not applicable
5. Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

B) STUDY DESIGN

Indicate the study design

1. Randomized controlled trial
2. Controlled clinical trial
3. Cohort analytic (two group pre + post)
4. Case-control
5. Cohort (one group pre + post (before + after))
6. Interrupted time series
7. Other specify: Quantitative descriptive audit
8. Can't tell

Was the study described as randomized? If NO, go to Component C.

NO YES

If Yes, was the method of randomization described? (See dictionary)

NO YES

If Yes, was the method appropriate? (See dictionary)

NO YES

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

C) CONFOUNDERS

(Q1) Were there important differences between the groups prior to the intervention?

1. Yes
2. No
3. Can't tell

The following are examples of confounders:

1. Race
2. Sex
3. Marital status/family
4. Age
5. SES (income or class)
6. Education
7. Health status
8. Pre-intervention score on outcome measure

(Q2) If yes indicate the percentage of relevant confounders that were controlled (either in the design (eg. stratification, matching) or analysis)?

1. 80 – 100% (most)
2. 60 – 79% (some)
3. Less than 60% (few or none)
4. Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

D) BLINDING

(Q1) Was (were) the outcome assessor(s) aware of the intervention or exposure status of the participants?

1. Yes
2. No
3. Can't tell

(Q2) Were the study participants aware of the research question?

1. Yes
2. No
3. Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

E) DATA COLLECTION METHODS

(Q1) Were data collection tools shown to be valid?

1. Yes
2. No
3. Can't tell

(Q2) Were data collection tools shown to reliable?

1. Yes
2. No
3. Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

F) WITHDRAWALS AND DROP-OUTS

(Q1) Were withdrawals and drop-outs reported in terms of numbers and/or reasons per group?

1. Yes
2. No
3. Can't tell
4. Not applicable (i.e. one time surveys or interviews)

(Q2) Indicate the percentage of participants completing the study. (If the percentage differs by groups, record the lowest).

1. 80 -100%
2. 60 - 79%
3. Less than 60%
4. Can't tell
5. Not applicable (i.e. Retrospective case-control)

RATE THIS SECTION	STRONG	MODERATE	WEAK	NOT APPLICABLE
See dictionary	1	2	3	N/A

G) INTERVENTION INTEGRITY

(Q1) What percentage of participants received the allocated intervention or exposure of interest?

1. 80 -100%
2. 60 - 79%
3. Less than 60%
4. Can't tell

(Q2) Was the consistency of the intervention measured?

1. Yes
2. No
3. Can't tell

(Q3) Is it likely that subjects received an unintended intervention (contamination or co-intervention) that may influence the result?

1. Yes
2. No
3. Can't tell

H) ANALYSES

(Q1) Indicate the unit of allocation (circle one)

Community organization/institution practice/office individual

(Q2) Indicate the unit of analysis (circle one)

Community organization/institution practice/office individual

(Q3) Are the statistical methods appropriate for the study design?

1. Yes
2. No
3. Can't tell

(Q4) Is the analysis performed by intervention allocation status (i.e. intention to treat) rather than the actual intervention received?

1. Yes
2. No
3. Can't tell

GLOBAL RATING

COMPONENT RATINGS

Please transcribe the information from the gray boxes on page 1-4 onto this page. See dictionary on how to rate this section.

A	**SELECTION BIAS**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
B	**STUDY DESIGN**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
C	**CONFOUNDERS**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
D	**BLINDING**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
E	**DATA COLLECTION METHOD**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
F	**WITHDRAWALS AND DROPOUTS**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	Not Applicable

GLOBAL RATING FOR THIS PAPER (circle one):

1. STRONG (no WEAK ratings)
2. MODERATE (no WEAK ratings)
3. WEAK (two or more WEAK ratings)

With both reviewers discussing the ratings:

Is there a discrepancy between the two reviewers with respect to the component (A-F) ratings?

NO YES

If yes, indicate the reason for the discrepancy

1. Oversight
2. Differences in interpretation of criteria
3. Differences in interpretation of study

Final decision of both reviewers (circle one):

1. STRONG
2. MODERATE
3. WEAK

3E Mittra, Kim, Han & Pollack (2009)

QUALITY ASSESSMENT TOOL FOR QUANTITATIVE STUDIES

COMPONENT RATING

A) SELECTION BIAS

(Q1) Are the individuals selected to participate in the study likely to be representative of the target population?

1. Very likely
2. Somewhat likely
3. Not likely
4. Can't tell

(Q2) What percentage of selected individuals agreed to participate?

1. 80 -100% agreement
2. 60 – 79and agreement
3. Less than 60% agreement
4. Not applicable
5. Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

B) STUDY DESIGN

Indicate the study design

1. Randomized controlled trial
2. Controlled clinical trial
3. Cohort analytic (two group pre + post)
4. Case-control
5. Cohort (one group pre + post (before + after))
6. Interrupted time series
7. Other specify: retrospective case series
8. Can't tell

Was the study described as randomized? If NO, go to Component C.

NO YES

If Yes, was the method of randomization described? (See dictionary)

NO YES

If Yes, was the method appropriate? (See dictionary)

NO YES

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

C) CONFOUNDERS

(Q1) Were there important differences between the groups prior to the intervention?

1. Yes
2. No
3. Can't tell

The following are examples of confounders:

1. Race
2. Sex
3. Marital status/family
4. Age
5. SES (income or class)
6. Education
7. Health status
8. Pre-intervention score on outcome measure

(Q2) If yes indicate the percentage of relevant confounders that were controlled (either in the design (eg. stratification, matching) or analysis)?

1. 80 – 100% (most)
2. 60 – 79% (some)
3. Less than 60% (few or none)
4. Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

D) BLINDING

(Q1) Was (were) the outcome assessor(s) aware of the intervention or exposure status of the participants?

1. Yes
2. No
3. Can't tell

(Q2) Were the study participants aware of the research question?

1. Yes
2. No
3. Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

E) DATA COLLECTION METHODS

(Q1) Were data collection tools shown to be valid?

1. Yes
2. No
3. Can't tell

(Q2) Were data collection tools shown to reliable?

1. Yes
2. No
3. Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

F) WITHDRAWALS AND DROP-OUTS

(Q1) Were withdrawals and drop-outs reported in terms of numbers and/or reasons per group?

1. Yes
2. No
3. Can't tell
4. Not applicable (i.e. one time surveys or interviews)

(Q2) Indicate the percentage of participants completing the study. (If the percentage differs by groups, record the lowest).

1. 80 -100%
2. 60 - 79%
3. Less than 60%
4. Can't tell
5. Not applicable (i.e. Retrospective case-control)

RATE THIS SECTION	STRONG	MODERATE	WEAK	NOT APPLICABLE
See dictionary	1	2	3	N/A

G) INTERVENTION INTEGRITY

(Q1) What percentage of participants received the allocated intervention or exposure of interest?

1. 80 -100%
2. 60 - 79%
3. Less than 60%
4. Can't tell

(Q2) Was the consistency of the intervention measured?

1. Yes
2. No
3. Can't tell

(Q3) Is it likely that subjects received an unintended intervention (contamination or co-intervention) that may influence the result?

1. Yes
2. No
3. Can't tell

H) ANALYSES

(Q1) Indicate the unit of allocation (circle one)

Community organization/institution practice/office individual

(Q2) Indicate the unit of analysis (circle one)

Community organization/institution practice/office individual

(Q3) Are the statistical methods appropriate for the study design?

1. Yes
2. No
3. Can't tell

(Q4) Is the analysis performed by intervention allocation status (i.e. intention to treat) rather than the actual intervention received?

1. Yes
2. No
3. Can't tell

GLOBAL RATING

COMPONENT RATINGS

Please transcribe the information from the gray boxes on page 1-4 onto this page. See dictionary on how to rate this section.

A	**SELECTION BIAS**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
B	**STUDY DESIGN**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
C	**CONFOUNDERS**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
D	**BLINDING**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
E	**DATA COLLECTION METHOD**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
F	**WITHDRAWALS AND DROPOUTS**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	Not Applicable

GLOBAL RATING FOR THIS PAPER (circle one):

1. STRONG (no WEAK ratings)
2. MODERATE (no WEAK ratings)
3. WEAK (two or more WEAK ratings)

With both reviewers discussing the ratings:

Is there a discrepancy between the two reviewers with respect to the component (A-F) ratings?

NO YES

If yes, indicate the reason for the discrepancy

1. Oversight
2. Differences in interpretation of criteria
3. Differences in interpretation of study

Final decision of both reviewers (circle one):

1. STRONG
2. MODERATE
3. WEAK

3F Modi, Shaw, Allman and Simcock (2008)

QUALITY ASSESSMENT TOOL FOR QUANTITATIVE STUDIES

COMPONENT RATING

A) SELECTION BIAS

(Q1) Are the individuals selected to participate in the study likely to be representative of the target population?

1. Very likely
2. Somewhat likely
3. Not likely
4. Can't tell

(Q2) What percentage of selected individuals agreed to participate?

1. 80 -100% agreement
2. 60 – 79and agreement
3. Less than 60% agreement
4. Not applicable
5. Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

B) STUDY DESIGN

Indicate the study design

1. Randomized controlled trial
2. Controlled clinical trial
3. Cohort analytic (two group pre + post)
4. Case-control
5. Cohort (one group pre + post (before + after))
6. Interrupted time series
7. Other specify:
8. Can't tell

Was the study described as randomized? If NO, go to Component C.

NO YES

If Yes, was the method of randomization described? (See dictionary)

NO YES

If Yes, was the method appropriate? (See dictionary)

NO YES

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

C) CONFOUNDERS

(Q1) Were there important differences between the groups prior to the intervention?

1. Yes
2. No
3. Can't tell

The following are examples of confounders:

1. Race
2. Sex
3. Marital status/family
4. Age
5. SES (income or class)
6. Education
7. Health status
8. Pre-intervention score on outcome measure

(Q2) If yes indicate the percentage of relevant confounders that were controlled (either in the design (eg. stratification, matching) or analysis)?

1. 80 – 100% (most)
2. 60 – 79% (some)
3. Less than 60% (few or none)
4. Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

D) BLINDING

(Q1) Was (were) the outcome assessor(s) aware of the intervention or exposure status of the participants?

1. Yes
2. No
3. Can't tell

(Q2) Were the study participants aware of the research question?

1. Yes
2. No
3. Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

E) DATA COLLECTION METHODS

(Q1) Were data collection tools shown to be valid?

1. Yes
2. No

3. Can't tell

(Q2) Were data collection tools shown to reliable?

1. Yes
2. No
3. Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

F) WITHDRAWALS AND DROP-OUTS

(Q1) Were withdrawals and drop-outs reported in terms of numbers and/or reasons per group?

1. Yes
2. No
3. Can't tell
4. Not applicable (i.e. one time surveys or interviews)

(Q2) Indicate the percentage of participants completing the study. (If the percentage differs by groups, record the lowest).

1. 80 -100%
2. 60 - 79%
3. Less than 60%
4. Can't tell
5. Not applicable (i.e. Retrospective case-control)

RATE THIS SECTION	STRONG	MODERATE	WEAK	NOT APPLICABLE
See dictionary	1	2	3	N/A

G) INTERVENTION INTEGRITY

(Q1) What percentage of participants received the allocated intervention or exposure of interest?

1. 80 -100%
2. 60 - 79%
3. Less than 60%
4. Can't tell

(Q2) Was the consistency of the intervention measured?

1. Yes
2. No
3. Can't tell

(Q3) Is it likely that subjects received an unintended intervention (contamination or co-intervention) that may influence the result?

7. Yes
8. No
9. Can't tell

H) ANALYSES

(Q1) Indicate the unit of allocation (circle one)

Community organization/institution practice/office individual

(Q2) Indicate the unit of analysis (circle one)

Community organization/institution practice/office individual

(Q3) Are the statistical methods appropriate for the study design?

1. Yes
2. No
3. Can't tell

(Q4) Is the analysis performed by intervention allocation status (i.e. intention to treat) rather than the actual intervention received?

1. Yes
2. No
3. Can't tell

GLOBAL RATING

COMPONENT RATINGS

Please transcribe the information from the gray boxes on page 1-4 onto this page. See dictionary on how to rate this section.

A	**SELECTION BIAS**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
B	**STUDY DESIGN**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
C	**CONFOUNDERS**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
D	**BLINDING**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
E	**DATA COLLECTION METHOD**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
F	**WITHDRAWALS AND DROPOUTS**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	Not Applicable

GLOBAL RATING FOR THIS PAPER (circle one):

1. STRONG (no WEAK ratings)
2. MODERATE (no WEAK ratings)
3. WEAK (two or more WEAK ratings)

With both reviewers discussing the ratings:

Is there a discrepancy between the two reviewers with respect to the component (A-F) ratings?

NO YES

If yes, indicate the reason for the discrepancy

1. Oversight
2. Differences in interpretation of criteria
3. Differences in interpretation of study

Final decision of both reviewers (circle one):

1. STRONG
2. MODERATE
3. WEAK

3G Sharma, Ooi, Figueira, Rosenberg, Masselos, Papalkar,

Paramanathan, Francis, Alexander & Ferch (2008)

QUALITY ASSESSMENT TOOL FOR
QUANTITATIVE STUDIES

COMPONENT RATING

A) SELECTION BIAS

(Q1) Are the individuals selected to participate in the study likely to be representative of the target population?

1. Very likely
2. Somewhat likely
3. Not likely
4. Can't tell

(Q2) What percentage of selected individuals agreed to participate?

1. 80 -100% agreement
2. 60 – 79and agreement
3. Less than 60% agreement
4. Not applicable
5. Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

B) STUDY DESIGN

Indicate the study design

1. Randomized controlled trial
2. Controlled clinical trial
3. Cohort analytic (two group pre + post)
4. Case-control
5. Cohort (one group pre + post (before + after))
6. Interrupted time series
7. Other specify: prospective, consecutive, observational study
8. Can't tell

Was the study described as randomized? If NO, go to Component C.

NO YES

If Yes, was the method of randomization described? (See dictionary)

NO YES

If Yes, was the method appropriate? (See dictionary)

NO YES

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

C) CONFOUNDERS

(Q1) Were there important differences between the groups prior to the intervention?

1. Yes
2. No
3. Can't tell

The following are examples of confounders:

1. Race
2. Sex
3. Marital status/family
4. Age
5. SES (income or class)
6. Education
7. Health status
8. Pre-intervention score on outcome measure

(Q2) If yes indicate the percentage of relevant confounders that were controlled (either in the design (eg. stratification, matching) or analysis)?

1. 80 – 100% (most)
2. 60 – 79% (some)
3. Less than 60% (few or none)
4. Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

D) BLINDING

(Q1) Was (were) the outcome assessor(s) aware of the intervention or exposure status of the participants?

1. Yes
2. No
3. Can't tell

(Q2) Were the study participants aware of the research question?

1. Yes
2. No
3. Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

E) DATA COLLECTION METHODS

(Q1) Were data collection tools shown to be valid?

1. Yes
2. No
3. Can't tell

(Q2) Were data collection tools shown to reliable?

1. Yes
2. No
3. Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

F) WITHDRAWALS AND DROP-OUTS

(Q1) Were withdrawals and drop-outs reported in terms of numbers and/or reasons per group?

1. Yes
2. No
3. Can't tell
4. Not applicable (i.e. one time surveys or interviews)

(Q2) Indicate the percentage of participants completing the study. (If the percentage differs by groups, record the lowest).

1. 80 -100%
2. 60 - 79%
3. Less than 60%
4. Can't tell
5. Not applicable (i.e. Retrospective case-control)

RATE THIS SECTION	STRONG	MODERATE	WEAK	NOT APPLICABLE
See dictionary	1	2	3	N/A

G) INTERVENTION INTEGRITY

(Q1) What percentage of participants received the allocated intervention or exposure of interest?

1. 80 -100%
2. 60 - 79%
3. Less than 60%
4. Can't tell

(Q2) Was the consistency of the intervention measured?

1. Yes
2. No
3. Can't tell

(Q3) Is it likely that subjects received an unintended intervention (contamination or co-

intervention) that may influence the result?

1. Yes
2. No
3. Can't tell

H) ANALYSES

(Q1) Indicate the unit of allocation (circle one)

Community organization/institution practice/office individual

(Q2) Indicate the unit of analysis (circle one)

Community organization/institution practice/office individual

(Q3) Are the statistical methods appropriate for the study design?

1. Yes
2. No
3. Can't tell

(Q4) Is the analysis performed by intervention allocation status (i.e. intention to treat) rather than the actual intervention received?

1. Yes
2. No
3. Can't tell

GLOBAL RATING

COMPONENT RATINGS

Please transcribe the information from the gray boxes on page 1-4 onto this page. See dictionary on how to rate this section.

A	**SELECTION BIAS**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
B	**STUDY DESIGN**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
C	**CONFOUNDERS**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
D	**BLINDING**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
E	**DATA COLLECTION METHOD**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
F	**WITHDRAWALS AND DROPOUTS**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	Not Applicable

GLOBAL RATING FOR THIS PAPER (circle one):

1. STRONG (no WEAK ratings)
2. MODERATE (no WEAK ratings)
3. WEAK (two or more WEAK ratings)

With both reviewers discussing the ratings:

Is there a discrepancy between the two reviewers with respect to the component (A-F) ratings?

NO YES

If yes, indicate the reason for the discrepancy

1. Oversight
2. Differences in interpretation of criteria
3. Differences in interpretation of study

Final decision of both reviewers (circle one):

1. STRONG
2. MODERATE
3. WEAK

3H Shukla, Daly & Legutko (2012)

QUALITY ASSESSMENT TOOL FOR QUANTITATIVE STUDIES

COMPONENT RATING

A) SELECTION BIAS

(Q1) Are the individuals selected to participate in the study likely to be representative of the target population?

1. Very likely
2. Somewhat likely
3. Not likely
4. Can't tell

(Q2) What percentage of selected individuals agreed to participate?

1. 80 -100% agreement
2. 60 – 79and agreement
3. Less than 60% agreement
4. Not applicable
5. Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

B) STUDY DESIGN

Indicate the study design

1. Randomized controlled trial
2. Controlled clinical trial
3. Cohort analytic (two group pre + post)
4. Case-control
5. Cohort (one group pre + post (before + after))
6. Interrupted time series
7. Other specify: Randomized prospective study
8. Can't tell

Was the study described as randomized? If NO, go to Component C.

NO YES

If Yes, was the method of randomization described? (See dictionary)

NO YES

If Yes, was the method appropriate? (See dictionary)

NO YES

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

C) CONFOUNDERS

(Q1) Were there important differences between the groups prior to the intervention?

1. Yes
2. No
3. Can't tell

The following are examples of confounders:

1. Race
2. Sex
3. Marital status/family
4. Age
5. SES (income or class)
6. Education
7. Health status
8. Pre-intervention score on outcome measure

(Q2) If yes indicate the percentage of relevant confounders that were controlled (either in the design (eg. stratification, matching) or analysis)?

1. 80 – 100% (most)
2. 60 – 79% (some)
3. Less than 60% (few or none)
4. Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

D) BLINDING

(Q1) Was (were) the outcome assessor(s) aware of the intervention or exposure status of the participants?

1. Yes
2. No
3. Can't tell

(Q2) Were the study participants aware of the research question?

1. Yes
2. No
3. Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

E) DATA COLLECTION METHODS

(Q1) Were data collection tools shown to be valid?

1. Yes
2. No
3. Can't tell

(Q2) Were data collection tools shown to reliable?

1. Yes
2. No
3. Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

F) WITHDRAWALS AND DROP-OUTS

(Q1) Were withdrawals and drop-outs reported in terms of numbers and/or reasons per group?

1. Yes
2. No
3. Can't tell
4. Not applicable (i.e. one time surveys or interviews)

(Q2) Indicate the percentage of participants completing the study. (If the percentage differs by groups, record the lowest).

1. 80 -100%
2. 60 - 79%
3. Less than 60%
4. Can't tell
5. Not applicable (i.e. Retrospective case-control)

RATE THIS SECTION	STRONG	MODERATE	WEAK	NOT APPLICABLE
See dictionary	1	2	3	N/A

G) INTERVENTION INTEGRITY

(Q1) What percentage of participants received the allocated intervention or exposure of interest?

1. 80 -100%
2. 60 - 79%
3. Less than 60%
4. Can't tell

(Q2) Was the consistency of the intervention measured?

1. Yes
2. No
3. Can't tell

(Q3) Is it likely that subjects received an unintended intervention (contamination or co-intervention) that may influence the result?

1. Yes
2. No
3. Can't tell

H) ANALYSES

(Q1) Indicate the unit of allocation (circle one)

Community organization/institution practice/office individual

(Q2) Indicate the unit of analysis (circle one)

Community organization/institution practice/office individual

(Q3) Are the statistical methods appropriate for the study design?

1. Yes
2. No
3. Can't tell

(Q4) Is the analysis performed by intervention allocation status (i.e. intention to treat) rather than the actual intervention received?

1. Yes
2. No
3. Can't tell

GLOBAL RATING

COMPONENT RATINGS

Please transcribe the information from the gray boxes on page 1-4 onto this page. See dictionary on how to rate this section.

A	**SELECTION BIAS**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
B	**STUDY DESIGN**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
C	**CONFOUNDERS**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
D	**BLINDING**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
E	**DATA COLLECTION METHOD**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
F	**WITHDRAWALS AND DROPOUTS**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	Not Applicable

GLOBAL RATING FOR THIS PAPER (circle one):

1. STRONG (no WEAK ratings)
2. MODERATE (no WEAK ratings)
3. WEAK (two or more WEAK ratings)

With both reviewers discussing the ratings:

Is there a discrepancy between the two reviewers with respect to the component (A-F) ratings?

NO YES

If yes, indicate the reason for the discrepancy

1. Oversight
2. Differences in interpretation of criteria
3. Differences in interpretation of study

Final decision of both reviewers (circle one):

1. STRONG
2. MODERATE
3. WEAK

3I van Vliet, Reus, Sermeus, Vissers, Sol & Lemij (2010)

QUALITY ASSESSMENT TOOL FOR QUANTITATIVE STUDIES

COMPONENT RATING

A) SELECTION BIAS

(Q1) Are the individuals selected to participate in the study likely to be representative of the target population?

1. Very likely
2. Somewhat likely
3. Not likely
4. Can't tell

(Q2) What percentage of selected individuals agreed to participate?

1. 80 -100% agreement
2. 60 – 79and agreement
3. Less than 60% agreement
4. Not applicable
5. Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

B) STUDY DESIGN

Indicate the study design

1. Randomized controlled trial
2. Controlled clinical trial
3. Cohort analytic (two group pre + post)
4. Case-control
5. Cohort (one group pre + post (before + after))
6. Interrupted time series
7. Other specify:
8. Can't tell

Was the study described as randomized? If NO, go to Component C.

NO YES

If Yes, was the method of randomization described? (See dictionary)

NO YES

If Yes, was the method appropriate? (See dictionary)

NO YES

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

C) CONFOUNDERS

(Q1) Were there important differences between the groups prior to the intervention?

1. Yes
2. No
3. Can't tell

The following are examples of confounders:

1. Race
2. Sex
3. Marital status/family
4. Age
5. SES (income or class)
6. Education
7. Health status
8. Pre-intervention score on outcome measure

(Q2) If yes indicate the percentage of relevant confounders that were controlled (either in the design (eg. stratification, matching) or analysis)?

1. 80 – 100% (most)
2. 60 – 79% (some)
3. Less than 60% (few or none)
4. Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

D) BLINDING

(Q1) Was (were) the outcome assessor(s) aware of the intervention or exposure status of the participants?

1. Yes
2. No
3. Can't tell

(Q2) Were the study participants aware of the research question?

1. Yes
2. No
3. Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

E) DATA COLLECTION METHODS

(Q1) Were data collection tools shown to be valid?

1. Yes
2. No
3. Can't tell

(Q2) Were data collection tools shown to reliable?

1. Yes
2. No
3. Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

F) WITHDRAWALS AND DROP-OUTS

(Q1) Were withdrawals and drop-outs reported in terms of numbers and/or reasons per group?

1. Yes
2. No
3. Can't tell
4. Not applicable (i.e. one time surveys or interviews)

(Q2) Indicate the percentage of participants completing the study. (If the percentage differs by groups, record the lowest).

1. 80 -100%
2. 60 - 79%
3. Less than 60%
4. Can't tell
5. Not applicable (i.e. Retrospective case-control)

RATE THIS SECTION	STRONG	MODERATE	WEAK	NOT APPLICABLE
See dictionary	1	2	3	N/A

G) INTERVENTION INTEGRITY

(Q1) What percentage of participants received the allocated intervention or exposure of interest?

1. 80 -100%
2. 60 - 79%
3. Less than 60%
4. Can't tell

(Q2) Was the consistency of the intervention measured?

1. Yes
2. No
3. Can't tell

(Q3) Is it likely that subjects received an unintended intervention (contamination or co-intervention) that may influence the result?

1. Yes
2. No
3. Can't tell

H) ANALYSES

(Q1) Indicate the unit of allocation (circle one)

Community organization/institution practice/office individual

(Q2) Indicate the unit of analysis (circle one)

Community organization/institution practice/office individual

(Q3) Are the statistical methods appropriate for the study design?

1. Yes
2. No
3. Can't tell

(Q4) Is the analysis performed by intervention allocation status (i.e. intention to treat) rather than the actual intervention received?

1. Yes
2. No
3. Can't tell

GLOBAL RATING

COMPONENT RATINGS

Please transcribe the information from the gray boxes on page 1-4 onto this page. See dictionary on how to rate this section.

A	**SELECTION BIAS**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
B	**STUDY DESIGN**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
C	**CONFOUNDERS**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
D	**BLINDING**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
E	**DATA COLLECTION METHOD**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	
F	**WITHDRAWALS AND DROPOUTS**	**STRONG**	**MODERATE**	**WEAK**	
		1	2	3	Not Applicable

GLOBAL RATING FOR THIS PAPER (circle one):

1. STRONG (no WEAK ratings)
2. MODERATE (no WEAK ratings)
3. WEAK (two or more WEAK ratings)

With both reviewers discussing the ratings:

Is there a discrepancy between the two reviewers with respect to the component (A-F) ratings?

NO YES

If yes, indicate the reason for the discrepancy

1. Oversight
2. Differences in interpretation of criteria
3. Differences in interpretation of study

Final decision of both reviewers (circle one):

1. STRONG
2. MODERATE
3. WEAK

APPENDIX 4

Quality Assessment Tool for Quantitative Studies Dictionary

The purpose of this dictionary is to describe items in the tool thereby assisting raters to score study quality. Due to under-reporting or lack of clarity in the primary study, raters will need to make judgements about the extent that bias may be present. When making judgements about each component, raters should form their opinion based upon information contained in the study rather than making inferences about what the authors intended.

A) SELECTION BIAS

(Q1) Participants are more likely to be representative of the target population if they are randomly selected from a comprehensive list of individuals in the target population (score very likely). They may not be representative if they are referred from a source (e.g. clinic) in a systematic manner (score somewhat likely) or self-referred (score not likely).

(Q2) Refers to the % of subjects in the control and intervention groups that agreed to participate in the study before they were assigned to intervention or control groups.

B) STUDY DESIGN

In this section, raters assess the likelihood of bias due to the allocation process in an experimental study. For observational studies, raters assess the extent that assessments of exposure and outcome are likely to be independent. Generally, the type of design is a good indicator of the extent of bias. In stronger designs, an equivalent control group is present and the allocation process is such that the investigators are unable to predict the sequence.

Randomized Controlled Trial (RCT)

An experimental design where investigators randomly allocate eligible people to an intervention or control group. A rater should describe a study as an RCT if the randomization sequence allows each study participant to have the same chance of receiving each intervention and the investigators could not predict which intervention was next. If the investigators do not describe the allocation process and only use the words 'random' or 'randomly', the study is described as a controlled clinical trial.

See below for more details.

Was the study described as randomized?

Score YES, if the authors used words such as random allocation, randomly assigned, and random assignment. Score NO, if no mention of randomization is made.

Was the method of randomization described?

Score YES, if the authors describe any method used to generate a random allocation sequence.

Score NO, if the authors do not describe the allocation method or describe methods of allocation such as alternation, case record numbers, dates of birth, day of the week, and any allocation procedure that is entirely transparent before assignment, such as an open list of random numbers of assignments.
If NO is scored, then the study is a controlled clinical trial.

Was the method appropriate?

Score YES, if the randomization sequence allowed each study participant to have the same chance of receiving each intervention and the investigators could not predict which intervention was next. Examples of appropriate approaches include assignment of subjects by a central office unaware of subject characteristics, or sequentially numbered, sealed, opaque envelopes.

Score NO, if the randomization sequence is open to the individuals responsible for recruiting and allocating participants or providing the intervention, since those individuals can influence the allocation process, either knowingly or unknowingly.

If NO is scored, then the study is a controlled clinical trial.

Controlled Clinical Trial (CCT)
An experimental study design where the method of allocating study subjects to intervention or control groups is open to individuals responsible for recruiting subjects or providing the intervention. The method of allocation is transparent before assignment, e.g. an open list of random numbers or allocation by date of birth, etc.

Cohort analytic (two group pre and post)
An observational study design where groups are assembled according to whether or not exposure to the intervention has occurred. Exposure to the intervention is not under the control of the investigators. Study groups might be non-equivalent or not comparable on some feature that affects outcome.

Case control study
A retrospective study design where the investigators gather 'cases' of people who already have the outcome of interest and 'controls' who do not. Both groups are then questioned or their records examined about whether they received the intervention exposure of interest.

Cohort (one group pre + post (before and after)
The same group is pretested, given an intervention, and tested immediately after the intervention. The intervention group, by means of the pretest, act as their own control group.

Interrupted time series
A time series consists of multiple observations over time. Observations can be on the same units (e.g. individuals over time) or on different but similar units (e.g. student achievement scores for particular grade and school). Interrupted time series analysis requires knowing the specific point in the series when an intervention occurred.

C) CONFOUNDERS

By definition, a confounder is a variable that is associated with the intervention or exposure and causally related to the outcome of interest. Even in a robust study design, groups may not be balanced with respect to important variables prior to the intervention. The authors should indicate if confounders were controlled in the design (by stratification or matching) or in the analysis. If the allocation to intervention and control groups is randomized, the authors must report that the groups were balanced at baseline with respect to confounders (either in the text or a table).

D) BLINDING

(Q1) Assessors should be described as blinded to which participants were in the control and intervention groups. The purpose of blinding the outcome assessors (who might also be the care providers) is to protect against detection bias.

(Q2) Study participants should not be aware of (i.e. blinded to) the research question. The purpose of blinding the participants is to protect against reporting bias.

E) DATA COLLECTION METHODS

Tools for primary outcome measures must be described as reliable and valid. If 'face' validity or 'content' validity has been demonstrated, this is acceptable. Some sources from which data may be collected are described below:

Self reported data includes data that is collected from participants in the study (e.g. completing a questionnaire, survey, answering questions during an interview, etc.).

Assessment/Screening includes objective data that is retrieved by the researchers. (e.g. observations by investigators).

Medical Records/Vital Statistics refers to the types of formal records used for the extraction of the data.

Reliability and validity can be reported in the study or in a separate study. For example, some standard assessment tools have known reliability and validity.

F) WITHDRAWALS AND DROP-OUTS

Score **YES** if the authors describe BOTH the numbers and reasons for withdrawals and drop-outs.

Score **NO** if either the numbers or reasons for withdrawals and drop-outs are not reported.

The percentage of participants completing the study refers to the % of subjects remaining in the study at the final data collection period in all groups (i.e. control and intervention groups).

G) INTERVENTION INTEGRITY

The number of participants receiving the intended intervention should be noted (consider both frequency and intensity). For example, the authors may have reported that at least 80 percent of the participants received the complete intervention. The authors should describe a method of measuring if the intervention was provided to all participants the same way. As well, the authors should indicate if subjects received an unintended intervention that may have influenced the outcomes. For example, co-intervention occurs when the study group receives an additional intervention (other than that intended). In this case, it is possible that the effect of the intervention may be over-estimated. Contamination refers to situations where the control group accidentally receives the study intervention. This could result in an under-estimation of the impact of the intervention.

H) ANALYSIS APPROPRIATE TO QUESTION

Was the quantitative analysis appropriate to the research question being asked?

An intention-to-treat analysis is one in which all the participants in a trial are analyzed according to the intervention to which they were allocated, whether they received it or not. Intention-to-treat analyses are favoured in assessments of effectiveness as they mirror the noncompliance and treatment changes that are likely to occur when the intervention is used in practice, and because of the risk of attrition bias when participants are excluded from the analysis.

Component Ratings of Study:

For each of the six components A – F, use the following descriptions as a roadmap.

A) SELECTION BIAS

Strong: The selected individuals are very likely to be representative of the target population (Q1 is 1) **and** there is greater than 80% participation (Q2 is 1).

Moderate: The selected individuals are at least somewhat likely to be representative of the target population (Q1 is 1 or 2); **and** there is 60 - 79% participation (Q2 is 2). 'Moderate' may also be assigned if Q1 is 1 or 2 and Q2 is 5 (can't tell).

Weak: The selected individuals are not likely to be representative of the target population (Q1 is 3); **or** there is less than 60% participation (Q2 is 3) **or** selection is not described (Q1 is 4); and the level of participation is not described (Q2 is 5).

B) DESIGN

Strong: will be assigned to those articles that described RCTs and CCTs.

Moderate: will be assigned to those that described a cohort analytic study, a case control study, a cohort design, or an interrupted time series.

Weak: will be assigned to those that used any other method or did not state the method used.

C) CONFOUNDERS

Strong: will be assigned to those articles that controlled for at least 80% of relevant confounders (Q1 is 2); **or** (Q2 is 1).

Moderate: will be given to those studies that controlled for 60 – 79% of relevant confounders (Q1 is 1) **and** (Q2 is 2).

Weak: will be assigned when less than 60% of relevant confounders were controlled (Q1 is 1) **and** (Q2 is 3) **or** control of confounders was not described (Q1 is 3) **and** (Q2 is 4).

D) BLINDING

Strong: The outcome assessor is not aware of the intervention status of participants (Q1 is 2); **and t**he study participants are not aware of the research question (Q2 is 2).

Moderate: The outcome assessor is not aware of the intervention status of participants (Q1 is 2); **or** the study participants are not aware of the research question (Q2 is 2); **or b**linding is not described (Q1 is 3 and Q2 is 3).

Weak: The outcome assessor is aware of the intervention status of participants (Q1 is 1); **and** the study participants are aware of the research question (Q2 is 1).

E) DATA COLLECTION METHODS

Strong: The data collection tools have been shown to be valid (Q1 is 1); **and** the data collection tools have been shown to be reliable (Q2 is 1).

Moderate: The data collection tools have been shown to be valid (Q1 is 1); **and** the data collection tools have not been shown to be reliable (Q2 is 2) **or** reliability is not described (Q2 is 3).

Weak: The data collection tools have not been shown to be valid (Q1 is 2) **or** both reliability and validity are not described (Q1 is 3 and Q2 is 3).

F) WITHDRAWALS AND DROP-OUTS - a rating of:

Strong: will be assigned when the follow-up rate is 80% or greater (Q2 is 1).

Moderate: will be assigned when the follow-up rate is 60 – 79% (Q2 is 2) **OR** Q2 is 5 (N/A).

Weak: will be assigned when a follow-up rate is less than 60% (Q2 is 3) or if the withdrawals and drop-outs were not described (Q2 is 4).

APPENDIX 5

UNIVERSITY of the WESTERN CAPE

OFFICE OF THE DEAN
DEPARTMENT OF RESEARCH DEVELOPMENT

13 June 2012

To Whom It May Concern

I hereby certify that the Senate Research Committee of the University of the Western Cape has approved the methodology and ethics of the following research project by: Ms S Singh (School of Nursing)

Research Project:	Best practice on operative nursing care in ophthalmic surgery for cataract and retinal detachment in South Africa: A systematic review.
Registration no:	12/5/18

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APPENDIX 6 – EDITORS LETTER

This is to confirm that the proofreading and editing of the thesis:

Best practices on operative nursing care in ophthalmic surgery for cataract and retinal detachment in South Africa: A systematic review

By Suveena Singh

University of the Western Cape

For an MCur (Education) at the School of Nursing

was done by Jenny Mostert in November 2012.

I have a Masters Degree in Education, in 2004 I completed John Linnegar's Training Course in Copy Editing and Proofreading and in 2012 I completed John Linnegar's Advanced Training Course in Copy Editing and Proofreading. I have since worked in the field of school textbooks, magazine and book articles, university theses and doctorates. I am a full member of PEG (Professional Editors' Guild).

Part-time proof reader and editor

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