Article

RELATIONSHIP BETWEEN TREATMENT COMPLIANCE LEVEL AND VISION VALUE IN POST-PHACOMULSIFICATION CATARACT SURGERY PATIENTS AT RUMAH SAKIT BHAYANGKARA LUMAJANG

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A B S T R A C T

Cataracts are one of the causes of blindness, successful cataract treatment does not depend on surgery alone. Postoperative care and treatment greatly influences visual outcomes after surgery. The research aims to explain the relationship between the level of treatment compliance and visual acuity in patients after phacomulsification cataract surgery at Rumah Sakit Bhayangkara Lumajang. The research design used was analytical observational with a cross sectional approach. The target population is 70 patients with cataracts who check up at the eye clinic, the target population is post-cataract surgery patients who are controlled at the eye clinic with a amount of 46 patients. The research sample consisted of 45 respondents who were selected using the Accidental Sampling technique. Data collection used the MMAS-8 questionnaire to measure the level of treatment compliance and the Snellen Chart to measure visual acuity values. Data analysis used the Spearman rank correlation test. The results of measuring the level of compliance with treatment of patients after phacomulsification cataract surgery at Rumah Sakit Bhayangkara Lumajang were obtained by 17 patients (37.8%) of the amount respondents who had a low level of treatment compliance. The results of measuring the vision values of 16 patients (35.6%) of the amount respondents had good vision values. The results of data analysis using the Spearman rank correlation test showed a significant relationship between the level of treatment compliance and vision scores with a value of ρ = 0.000 < 0.05. This shows that the more compliant the treatment is, the better the visual acuity score. Research shows that patient compliance with post-cataract surgery treatment is critical for optimal recovery. High compliance is associated with improved vision, so disciplined patients tend to have better vision. These findings emphasize that interventions to improve patient compliance should be a top priority in cataract treatment, and postoperative patient compliance needs to be considered.

I. INTRODUCTION

Cataracts remain the leading cause of blindness worldwide, so the number of cataract surgeries continues to increase. Although the results of post-cataract surgery visual acuity are generally considered very good and effective in the long term, it should be noted that post-operative care plays a crucial role (Tanjung, 2022). The success of cataract surgery is also influenced by the level of patient compliance with post-operative care. The occurrence of client non-compliance after cataract surgery can have an impact not only in medical or clinical aspects, but also enter the social dimension by disrupting the productivity, performance, and mobility of patients. This situation shows that post-cataract surgery patient non-compliance is not only a health problem, but also a social challenge that needs serious attention (Purwana et al., 2023).

According to data from the World Health Organization (WHO), regarding the distribution of causes of blindness globally, cataracts occupy the main position as a cause of blindness with a proportion reaching 51%, followed by glaucoma and Age Related Macular Degeneration (ARMD). Indonesia is ranked third with the highest number of blindness cases in the world and ranked first in Southeast Asia (Kurniasih et al., 2022). The estimated incidence of cataracts reaches 0.1% per year, which means that every year there are around 1,000 people who have new cataracts. The Indonesian population also tends to experience cataracts earlier, with around 16-22% of cataract sufferers undergoing surgery under the age of 55, compared to subtropical populations (Detty et al., 2021). However, there is an imbalance between the number of new cataract cases (incidence) which reaches 210,000 people per year and the number of cataract operations which only covers 80,000 people per year, causing an increase in the number of cataract cases (Kurniasih et al., 2022). According to the Rapid Assessment Of Avoidable Blindness (RAAB) survey, in 2014-2016, East Java ranked highest in contributing to blindness rates, reaching 4.4% of the population aged over 50 years, and for cataract cases reaching 81.1%. This position shows that cases of blindness and cataracts in East Java dominate nationally. In 2021-2022, there was an increase in cataract cases in East Java, with the highest number of cases recorded in 2022 at 78,478 cases (Wicitra et al., 2023). Cataracts are a degenerative process that causes clouding of the lens of the eyeball, resulting in decreased vision to the point of blindness. This cloudiness is triggered by a biochemical reaction that causes protein clumping in the lens. Cataracts can occur congenitally, which is a cataract condition that is present from birth. However, in general, cataracts often develop through degenerative processes associated with aging, or can also be caused by trauma or the influence of certain drugs such as steroids, chlorpromazine, allopurinol, and amiodarone (Mokodongan et al., 2021).

As a visual impairment, cataracts have complex consequences and involve various dimensions, such as the impact on physical aspects (decreased visual acuity due to cloudiness in the eye), the impact on mental or psychological aspects (emotional fluctuations, potential depression, level of life satisfaction, and happiness), the impact on social aspects (limitations in participating in social activities and interpersonal relationships in society), and the impact on functional aspects (obstacles in mobility, carrying out daily activities, and the ability to perform self-care) (Hidayaturahmah et al., 2021). The main procedure in treating cataracts to improve visual function is through cataract surgery (Izzuddin et al., 2022). There are several surgical techniques

that are commonly used, including Intra-Capsular Cataract Extraction (EKIK), Extra-Capsular Cataract Extraction (EKEK), Small Incision Cataract Surgery (SICS), and phacoemulsification (Kurniasih et al., 2022). The choice of surgical technique for cataract patients is adjusted to the individual patient's condition. One of the indicators used to evaluate the results of cataract surgery is through a comparison of vision before and after surgery. Vision evaluation is carried out by measuring the ability of the eye using the standard Snellen Chart card examination, which consists of rows of letters with decreasing sizes from top to bottom. The time required to achieve optimal visual acuity after surgery is around 4 weeks, with the desired target visual acuity being ≥ 6/18 (Hanis et al., 2023).

Although cataract surgery provides significant benefits in improving visual acuity, this procedure is not without the risk of complications. Certain factors, including a lack of patient knowledge regarding treatment and care, can cause complications after cataract surgery (Sulistiawan et al., 2023). Possible complications that may occur in patients after undergoing cataract surgery include corneal edema, bleeding, secondary glaucoma, chronic uveitis, cystic macular edema (MCE), retinal detachment, endophthalmitis, toxic anterior segment syndrome, posterior capsule opacification (PCO), surgically induced astigmatism (AIS), and intraocular lens dislocation (Nana and Sari, 2023). Success in cataract treatment does not only depend on the surgical procedure alone, but is also related to postoperative care. The importance of postoperative care cannot be ignored, as it has a significant impact on the overall outcome of cataract treatment (Pramono and Agustini, 2021). The success rate of recovery after cataract surgery is greatly influenced by the patient's level of compliance with postoperative care procedures. Patient compliance refers to the extent to which the patient's behavior is in accordance with the guidelines provided by the healthcare professional. Several factors that can influence the level of non-compliance involve the complexity of the treatment procedure, the lifestyle changes required, the duration of time the patient must follow, as well as consideration of whether the disease is painful, and the extent of the severity of the disease felt by the patient (Suhartini et al., 2022).

The success of treatment in post-cataract surgery patients also depends on the level of patient compliance in following the instructions of health workers, so that the healing process can proceed as expected (Yahya et al., 2021). According to research conducted by Purwaningsih (2021), at the Eye Clinic of Undata Regional General Hospital, Palu, 4 patients undergoing post-cataract surgery care showed that patient compliance with the care recommendations from nurses was lacking. The results of interviews with 3 nurses in the clinic stated that patients undergoing post-cataract surgery control and care did not fully follow the guidelines given by doctors and nurses. This resulted in complications, such as red eyes and decreased vision quality. This finding is in line with research conducted by Purwana et al., (2023), a preliminary study at the Panti Health Center found that of the 10 post-cataract surgery patients observed, 7 of them (76.6%) recovered quickly without complications due to the good level of compliance with post-cataract surgery care. Meanwhile, 3 other patients (23%) experienced normal healing and some experienced complications, such as corneal edema, due to lack of compliance with post-cataract surgery care.

Based on the background above, it can be concluded that until now there has

been no research that specifically explores and analyzes the relationship between the level of compliance with post-cataract surgery treatment and visual acuity values in patients. Therefore, the researcher intends to conduct a study entitled "the relationship between the level of compliance with treatment and visual acuity values in post-phacomulsification cataract surgery patients at the Rumah Sakit Bhayangkara Lumajang". By conducting this study, it is hoped that it can provide a deeper understanding of the impact of the level of patient compliance with post-cataract surgery treatment procedures on visual acuity values. This study is important as an initial step to fill the knowledge gap and can provide a strong scientific basis for the development of knowledge. Thus, the results of this study are expected to provide a valuable contribution to the understanding and improvement of the quality of care for post-cataract surgery patients.

II. METHODS

Research design is a plan and procedure that summarizes general assumptions to detailed methods in data collection and analysis (Creswell, 2017). In this study, an analytical observational research design was used with a cross-sectional approach. The cross-sectional approach emphasizes one measurement or observation of independent and dependent variable data at one point in time, without any follow-up. Although not all research subjects were observed on the same day or time, both independent and dependent variables were evaluated only once. By using a cross-sectional design, the prevalence or effect of a phenomenon (dependent variable) can be obtained which is associated with its cause (independent variable) (Nursalam, 2020)

III. RESULT

1) Reseacrh Result

This chapter will describe the results of the study on the Relationship between the Level of Treatment Compliance and Vision Values in Post-Phacomulsification Cataract Surgery Patients at Rumah Sakit Bhayangkara Lumajang, including participant characteristic data, results of measuring the level of treatment compliance using the Morinsky Medication Adherence Scale Eight Item (MMAS-8) questionnaire, results of measuring vision values to determine the level of visual acuity using the Snellen Chart, and results of inferential analysis using the Spearman rank correlation test to prove the correlation between the level of treatment compliance and vision values in post-cataract surgery patients.

1. Respondent Characteristics

Data on the characteristics of respondents involved in this study can be seen in tables 1, 2, 3 and 4.

Table 1. Respondent Characteristics by Age

Characteristics	Frequency (f)	Percentage (%)
Umur		
a. 41 – 50 tahun	4	8,9
b. 51 – 60 tahun	26	57,8
c. 61 – 70 tahun	13	28,9
d. > 70 tahun	2	4,4
Amount	45	100

Table 1 shows that in this study more than half of the respondents were in the 51-60 year age range, namely 26 respondents (57.8%).

Table 2. Respondent Characteristics Based on Gender

Characteristics	Frequency (f)	Percentage (%)
Gender		
a. Male	26	57,8
b. Female	19	42,2
Amount	45	100

Table 2 shows that in this study more than half of the respondents were male, namely 26 respondents (57.8%).

Table 3. Respondent Characteristics Based on Job Type

Characteristics	Frequency (f)	Percentage (%)
Occupation		
a. housewife	12	26,7
b. farmer	14	31,1
c. self-employed	15	33,3
d. Lain-Lain	4	8,9
Amount	45	100

Table 3 shows that in this study, a small number of respondents worked as self-employed, namely 15 respondents (33.3%).

Table 4. Respondent Characteristics Based on Education Level

Characteristics	Frequency (f)	Percentage (%)
last education		
a. No school	8	17,8
b. Elemnetary school	10	22,2
c. JHS	17	37,8
d. SHS	10	22,2
Amount	45	100

Table 4 shows that in this study, a small number of respondents had a final education of junior high school/Islamic junior high school, namely 17 respondents (33.3%).

2. Results of Medication Compliance Level Measurement

Data from the results of measuring the level of treatment compliance of respondents involved in this study can be seen in the following table.

Table 5. Level of Respondents' Treatment Compliance at the Eye Clinic of Rumah Sakit Bhayangkara Lumajang

Category	Frequency (f)	Percentage (%)
a. High	13	28,9
b. Middle	15	33,3
c. Low	17	37,8
Amount	45	100

Table 5 shows that almost half of the amount respondents had a low level of medication compliance, namely 17 respondents or 37.8%.

3. Results of Visual Acuity Measurement

Interpretation data from the results of measuring the visual acuity values of respondents involved in this study can be seen in the following table.

Table 6. Results of Visual Acuity Measurement at the Eye Clinic of Rumah Sakit Bhayangkara Lumajang

Variabel	Frequency (f)	Percentage (%)
a. Baik	16	35,6
b. Middle	15	33,3
c. Bad	14	31,1
Amount	45	100

Table 6 shows that a small portion of the amount respondents had good vision, namely 16 respondents or 35.6%.

4. Cross Tabulation of Treatment Compliance Level with Vision Value

Table 7. Cross Tabulation of Treatment Compliance Level with Vision Values

The results of the cross-tabulation of the measurement of the level of treatment compliance with visual acuity values can be observed in the table below.

Cross tabulation		Visual acuity							
		B	%	Middle	%	B	%	A	%
Treatment Compliance Level	High	1	2	0	0	0	0	1	2
	Middle	3	6,	12	2	0	0	1	3
	Low	0	0	3	6	14	3	1	3
	Amount	1	3	15	3	14	3	4	1

Table 7 shows that 17 respondents (37.8%) had a low level of treatment compliance with a visual acuity value of 14 respondents having poor vision and 3 respondents having moderate vision.

2) Data analysis

The data from the bivariate analysis using the Spearman rank correlation test using IBM SPSS 25 software can be seen in the following table.

Table 8. Bivariate Analysis Results Spearman Rank Correlation Test

Variable	number of samples (N)	Spearman Rank Correlation		Significance Value
		Medication Compliance	Visual acuity	
Medication Compliance	45	1	0,915	0,000
Visual acuity	45	0,915	1	

From the table above, the coefficient figure is 0.915, which means that the level of strength of the relationship between the treatment compliance variable and the visual acuity value is very strong. The correlation coefficient figure is also positive so that the relationship between the variables is unidirectional, which means that the more the patient complies with the treatment, the better the patient's visual acuity value. Table 5.4 also shows that the significance value is 0.000, because the significance value of 0.000 is smaller than 0.05, it means that there is a significant relationship between the treatment compliance variable and the visual acuity value. The results of data analysis using the Spearman rank correlation test show that there is a significant relationship between treatment compliance and post-phacomulsification cataract surgery visual acuity value at the Rumah Sakit Bhayangkara Lumajang. This shows that the lower the level of treatment compliance, the greater the likelihood that the visual acuity value will be bad. This means that the alternative research hypothesis (H1) set by the researcher can be accepted so that it can be interpreted that there is a relationship between treatment compliance and post-phacomulsification cataract surgery visual acuity value at the Rumah Sakit Bhayangkara Lumajang. This can also be interpreted that the higher the level of treatment compliance, the better the patient's visual acuity value.

IV. DISCUSSION

1. Discussion and Discussion

1) Compliance with Post Cataract Surgery Phacoemulsification Treatment at Rumah Sakit Bhayangkara Lumajang

Based on the results of the study, the number of respondents with low medication compliance at the Rumah Sakit Bhayangkara Lumajang reached 17 people or 37.8%, while respondents with a high level of medication compliance only numbered 13 people or 28.9%. And 17 people with low compliance, 3 of whom were respondents with moderate vision values, in this case influenced by several factors, one of which was family involvement in treatment assistance such as administering eye drops every 2 hours, providing nutrition, reducing activity and maintaining eye hygiene. According to Pramono and Agustini (2021), success in cataract treatment does not only depend on the surgical procedure alone, but is also related to post-operative care. The importance of post-operative care cannot be ignored, as it has a significant impact on the overall outcome of cataract treatment. Patient compliance refers to the extent to which patient behavior is in accordance with the guidelines provided by health professionals. Several factors that can influence the level of non-compliance involve the complexity of the treatment procedure, the lifestyle changes required, the duration of time the patient must follow, as well as consideration of whether the disease is painful, and the

extent of the severity of the disease felt by the patient (Suhartini et al., 2022).

Based on the results of the study, the number of respondents with a low level of medication compliance at the Rumah Sakit Bhayangkara Lumajang reached 17 people or 37.8%, while respondents with a high level of medication compliance only numbered 13 people or 28.9%. And 17 people with low compliance, 3 of whom were respondents with moderate vision values, in this case influenced by several factors, one of which was family involvement in treatment assistance such as administering eye drops every 2 hours, providing nutrition, reducing activity and maintaining eye hygiene. According to Pramono and Agustini (2021), success in cataract treatment does not only depend on the surgical procedure itself, but is also related to post-operative care. The importance of post-operative care cannot be ignored, as it has a significant impact on the overall outcome of cataract treatment. Patient compliance refers to the extent to which patient behavior is in accordance with the guidelines provided by health professionals. Several factors that can influence the level of non-compliance involve the complexity of the treatment procedure, the lifestyle changes required, the duration of time the patient must be followed, as well as consideration of whether the disease is painful, and the extent of the severity of the disease felt by the patient (Suhartini et al., 2022).

2) Results of Visual Acuity Measurement at Rumah Sakit Bhayangkara Lumajang

Based on the results of the study, it was shown that 16 respondents or 35.6% had good visual acuity values, namely between 6/6-6/18, while only 14 respondents or 31.1% had poor visual acuity values.

According to Hanis et al., (2023), one way to assess the results of cataract surgery is to compare visual acuity before and after the procedure. This evaluation is carried out using a Snellen Chart card, which has rows of letters with decreasing sizes from top to bottom to measure the visual ability of the eye. Generally, it takes about 4 weeks to achieve optimal visual acuity levels after surgery, with the expected target being ≥ 6/18.

According to the author's assumption, the difference in visual acuity values between respondents with good and poor vision can be caused by several factors. One of them is the level of patient compliance in undergoing postoperative care, such as the use of prescribed eye drops, maintaining eye hygiene, and attending routine check-ups, as well as the role of the family in assisting with the treatment of post-cataract surgery patients. Compliant patients tend to achieve better visual acuity results because they follow all instructions given by health workers. On the other hand, non-compliance can lead to complications such as infection or inflammation, which ultimately affects the visual outcome after surgery.

Older age factors can affect the final outcome of cataract surgery, not only because of the higher risk of complications but also because of the natural decline in biological function of the eye with age. Decreased elasticity of the eye lens, progressive damage to retinal cells, and decreased regenerative ability of eye tissue in elderly patients can contribute to suboptimal postoperative visual acuity

This is in line with a study conducted by Purwaningsih, (2021), at the Eye Clinic of Undata Regional General Hospital, Palu, in 4 patients undergoing post-cataract surgery care, it was found that the level of compliance with recommended care was still low. Based

on interviews with 3 nurses in the clinic, it was found that patients did not fully follow the instructions given by doctors and nurses. As a result, patients experienced complications such as redness of the eyes and decreased quality of vision.

Therefore, a more integrated approach has been taken in the management of elderly cataract patients, including more careful preoperative planning, strict postoperative monitoring, and more in-depth education regarding the importance of compliance with medication and eye care after surgery, so that the results of this study showed that the patient's visual acuity value was at a good level of 35.6%.

3) Relationship between Treatment Compliance and Post-Cataract Surgery Vision Values at Rumah Sakit Bhayangkara Lumajang

The results of the study showed that the results of data analysis using the Spearman rank correlation test obtained a significance value of 0.000, because the significance value of 0.000 is smaller than 0.05, which means that the level of strength of the relationship between the treatment compliance variable and the visual acuity value is very strong. The correlation coefficient number is also positive so that the relationship between the variables is unidirectional, which means that the more compliant the patient's treatment, the better the patient's visual acuity value is evidenced by Table 5.7 which shows that the number of low levels of compliance with poor visual acuity values is greater than the high level of compliance with good visual acuity values. Table 5.4 also shows that the coefficient number is 0.915, meaning that there is a significant relationship between the treatment compliance variable and the visual acuity value. According to the facts produced from this statistical analysis, treatment compliance directly contributes to improving postoperative visual acuity outcomes. This shows that interventions aimed at improving patient compliance with treatment can result in better eye health outcomes. The high correlation coefficient value indicates that the treatment compliance variable has a major influence on the success of patient vision after cataract surgery.

This is in accordance with the results of a study conducted by Suhartini et al., (2022), the success rate of post-cataract surgery recovery is greatly influenced by the extent to which patients comply with the recommended treatment procedures. This compliance refers to how well patients follow the instructions given by medical personnel.

Factors that can influence non-compliance include the complexity of the treatment procedure, the need for lifestyle changes, the length of the treatment period, and the presence of pain and the severity of the disease felt by the patient. The success of the healing process for post-cataract surgery patients also depends greatly on their compliance with the instructions of health workers, which ultimately determines whether recovery proceeds as expected (Yahya et al., 2021).

In the author's opinion, the results of this study confirm that patient compliance with post-operative care procedures and family assistance in the treatment process are one of the key factors determining the success of vision recovery after cataract surgery. High compliance not only increases the likelihood of a faster recovery but also reduces the risk of complications that can negatively impact visual acuity. Therefore, effective interventions to improve patient compliance should be a priority in post-operative care programs.

The authors also argue that intensive and ongoing education for patients and their families is essential to ensure a

clear understanding of the importance of following all medical instructions. This education should include information about the benefits of good compliance and the potential risks if treatment is neglected. Medical consultation or education aims to increase participant motivation in improving quality of life and improving health.

Based on the results of research by Nana and Sari, (2023), it was found that there was a significant relationship between the education provided and patient compliance in taking medication at the Gamping 1 Health Center in Yogyakarta, with an Asymp. Sig value of 0.000 (<0.005). This shows that providing education has a significant impact on patient compliance in following treatment.

2. Research Limitations

In this study, there are several limitations that need to be considered, namely:

a. This study was only conducted on post-phacoemulsification cataract surgery patients at the Rumah Sakit Bhayangkara Lumajang, so the results cannot be generalized to other populations.

b. The medication compliance variable was measured using a self-report instrument, which depends on the respondent's memory and honesty. This method is susceptible to social bias and recall bias, where patients may report better adherence than they actually did, or have difficulty recalling details about the treatment they received.

c.This study did not account for other factors that may influence postoperative visual outcomes, such as non-ocular comorbidities, nutritional status, or social support. These factors could be confounding variables that influence the relationship between treatment adherence and visual outcomes.

3. Implications for Services, Education, and Health Implications for Services, Education, and Health

1) Implications for Service

This study provides impetus for improving the quality of healthcare services, particularly in the management of post-cataract surgery patients. By understanding the relationship between medication adherence and visual outcome, hospitals can develop more effective and efficient treatment protocols, which not only improve clinical outcomes but also increase patient satisfaction. Improved patient adherence will reduce the need for additional follow-up or further medical interventions, which in turn can reduce the cost of care and improve hospital operational efficiency.

2) Implications for Education

The results of this study provide implications that compliance with post-cataract surgery patient treatment is important to note. Nursing education institutions through the tri dharma of higher education activities can collaborate with hospitals in implementing the tri dharma of higher education which can help improve the level of compliance with post-phacomulsification cataract surgery patient treatment.

3) Implications for Health

From a public health perspective, this study provides a basis for interventions that can significantly improve the quality of life of post-cataract surgery patients. By improving adherence to treatment, post-operative complications can be minimized, and patient visual outcomes can be improved. This means that more patients will receive the full benefits of cataract surgery, including improved visual acuity and reduced risk of blindness. Overall, improved visual outcomes contribute to increased

productivity and independence of patients, which positively impacts their quality of life.

V. CONCLUSION

Based on the objectives and results of the study of the Relationship between the Level of Treatment Compliance with the Visual Acuity of Post-Phacomulsification Cataract Surgery Patients at Rumah Sakit Bhayangkara Lumajang, it was found that:

a. The level of treatment compliance of post-phacomulsification cataract surgery patients at Rumah Sakit Bhayangkara Lumajang mostly had low compliance with a amount of 17 respondents or 37.8%

b. The visual acuity value of post-phacomulsification cataract surgery patients at Rumah Sakit Bhayangkara Lumajang mostly had good visual acuity with a amount of 16 respondents or 35.6%

c. There is a significant relationship between the level of treatment compliance of post-phacomulsification cataract surgery at Rumah Sakit Bhayangkara Lumajang as evidenced by the value of $\rho = 0.000$ (<0.05).

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