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The Relationship Between Vision and Ability To Activity In Post Cataract Surgery Patients

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ABSTRACT

Purpose: The purpose of this study was divided into general goals and specific goals, where the general goal was to determine the relationship between visual acuity and activity ability in post-cataract surgery patients at Pandega General Hospital, Pangandaran Regency. **Methods:** The research method used is correlational quantitative descriptive using a cross sectional design approach with the sample in this study namely 50 postoperative cataract patients, bivariate analysis in this study is Spearman Rank. **Result:** The results showed that there was a significant relationship between visual acuity and activity ability in post-cataract surgery patients, because the value α > ρ value (0.05 > 0.000), and the Spearman Rank value was obtained with a correlation coefficient value of 0.577 with a level the significance for the general hypothesis is 0.000 at the 0.05 or 95% confidence level. **Conclusion:** This research can be used as input for educational institutions for nurse researchers at the health service and the community about the visual acuity of post-cataract surgery patients

Keywords: Cataract, Activity Ability, Visual Acuity

Introduction

Impaired visual acuity is one of the problems in society that will always be encountered if there is no early prevention, vision is one of the most important factors in all aspects of life. *The World Health Organization (WHO)* found that there are 285 million people who have visual impairments in the world, 39 million are blind, and 246 million have *low vision* (Liu et al., 2017). Representative from the Association of Indonesian Ophthalmol gists (Perdami) dr. Aldiana Halim said that in Indonesia in 2017 there were 8 million people with visual impairments. And 81.2% of them are visual impairment caused by cataracts.

Cataracts are a condition in which the lens of the human eye becomes cloudy. Usually cataracts will occur with age which cannot be avoided. The severity of cataracts varies and is caused by several factors including congenital abnormalities, injuries, lifestyle and certain medications. Approximately 90% of the causes of cataract cases are age, other causes include traumatic and congenital abnormalities (Astari, 2018).

Decreased visual acuity caused by cataracts will of course greatly affect the pattern of activity in sufferers. Whether it's daily activities, social activities, spiritual activities and even economic activities for cataract sufferers. The occurrence of cataracts will affect the quality of life. A decrease in the quality of life of cataract patients is characterized by a person's reduced ability to do and complete something or limited activities that are usually carried out daily (Fadhilah et al., 2019).

Until now there has not been found a drug to treat cataracts. Surgery is the main treatment for cataract cases. The maintenance or operation process is carried out by replacing the damaged lens with a replacement lens. The expected result after maintenance is that the patient's visual function improves marked by an increase in visual acuity so that the patient can return to normal or independent activities. Based on the preliminary study conducted, data were obtained at the Pandega Hospital in Pangandaran Regency from August to October 2022, a total of 93 cataract surgeries had been performed, with an average of 30 patients operating per month.

In a study conducted by (Péres et al., 2017) stated that there is a relationship between decreased eye vision and one's routine activities. Ronny Gushalf (2015) examined the differences in visual acuity before and after cataract surgery at the Cicendo Eye Hospital in Bandung for 20 patients who had cataract surgery with controls for at least 4 visits after cataract surgery, and got the result of an improvement in visual acuity , compared to surgery. Based on the description above, I am interested in conducting research with the title "The relationship between visual acuity and activity ability in post-cataract surgery patients at Pandega Hospital, Pangandaran Regency".

The purpose of this study was divided into general goals and specific goals, where the general goal was to determine the relationship between visual acuity and activity ability in post-cataract surgery patients at Pandega General Hospital, Pangandaran Regency. While the specific objectives were to determine visual acuity (*visus*) in post-cataract surgery patients at Pandega Hospital, Pangandaran Regency, to determine the ability to move in postoperative patients at Pandega Hospital, Pangandaran Regency, and to determine the relationship between visual acuity and the ability to move in postoperative cataract patients at RSUD Pandega Pangandaran Regency.

The benefits of this research include theoretical benefits and practical benefits. Theoretically It is hoped that it can be used as information material and in *literacy* education and further research on visual acuity and ability to move patients after cataract surgery. Practically speaking It is hoped that it will be useful for agencies (hospitals), advertising professionals, health offices and the

public in adding insight, especially regarding the relationship between visual acuity and ability in post-cataract surgery patients.

Methods

This research is a correlational quantitative descriptive study using a cross sectional approach. *Cross sectional* is a type of research that measures pressure time and is independent and dependent variable only one time at a time. Correlational quantitative descriptive was used to find the relationship between visual acuity and the activity ability of post-cataract surgery patients. The population in this study were all 50 patients after cataract surgery. As for the *sampling technique* in this study, *total sampling,* the average of the number of patients during the last 3 months namely 150/3, so that the sample taken is 50 respondents.

The inclusion criteria in this study were post-cataract surgery patients on the 7th day of control, patients were able to communicate well and clearly and were willing to be respondents. Whereas the exclusion criteria were patients who experienced severe complications, experienced complications during surgery, and patients with other eye diseases. The instruments used to determine the patient's level of activity ability used the *Barthel index questionnaire,* and to determine the patient's visual acuity used *the Snellen chart.*

Data analysis used in this research is univariate analysis and bivariate analysis. Univariate analysis in this study was the visual acuity of postoperative patients, and the activity abilities of postoperative cataract patients. Meanwhile, bivariate analysis analyzed the relationship between visual acuity and activity ability in post-cataract surgery patients at Pandega General Hospital, Pangandaran Regency, using *non-parametric statistical techniques* and the statistical test used was the *Spearman rank correlation test.*

Results

Table 1 Frequency Distribution of Visual Acuity (*Visus*) in Post-Cataract Surgery Patients

Visual acuity	Activity Ability										Total		ρ value
	Independent		Mild Addiction		Moderate dependency		Heavy Addiction		Total Dependence				
	F	%	F	%	F	%	F	%	F	%	F	%	
Good	14	42,4	8	24,2	11	33,3	0	0	0	0	33	66	0.000
Currently	0	0	3	33,3	6	66,7	0	0	0	0	9	18	
Bad	0	0	1	12.5	2	25	5	62.5	0	0	8	16	
Amount	14	28	12	24	19	28	5	10	0	0	50	100	

Based on table 1, it is known that visual acuity (*visus*) in post-cataract surgery patients at Pandega General Hospital, Pangandaran Regency, most of the respondents were in the good category as many as 33 people (66%), most of the respondents were in the moderate category as many as 9 people (18%) and a small proportion respondents in the bad category were 6 people (16%).

Table 2. Frequency Distribution of Activity Ability in Post Cataract Surgery Patients at Pandega Hospital, Pangandaran Regency

NO	Activity Ability	Frequency	Percentage
1.	Independent	14	28
2.	Mild Addiction	12	24
3.	Moderate Dependence	19	38
4.	Heavy Addiction	5	10
5.	Total Dependence	0	0
Amount		**50**	**100**

Based on table 2 . It is known that the ability to move in post-cataract surgery patients at Pandega General Hospital, Pangandaran Regency, almost half of the respondents were in the moderately dependent category as many as 19 people (38%) and in the independent category as many as 14 people (28%), a small proportion of respondents in the mild dependence category were 12 people (24). %) and in the category of severe dependence as many as 5 people (10%), and not in the category of total dependence.

Table 3. Frequency Distribution of the Relationship between Visual Acuity and Activity Ability in Post-Cataract Surgery Patients

NO	Sharpness of Vision (*Visus*)	Frequency	Percentage
1.	Good (20/20-20/60)	33	66
2.	Moderate (> 20/60-20/200)	9	18
3.	Bad (>20/200)	8	16
Amount		**50**	**100**

Based on table 3. The above shows that of the 33 respondents with good visual acuity, almost half as many as 14 people (44.4%) were independent in their ability to move, of the 9 respondents with moderate visual acuity, most of them were 6 people (66.7%) who were in the ability to do activities . Of the 8 respondents with poor visual acuity, most of them were 5 people (62.5%) with heavy activity abilities.

From the results of data analysis obtained a ρ value of 0.000. Based on the results of the data analysis above, it can be concluded that there is a significant relationship between visual acuity and activity ability in post-cataract surgery patients at Pandega General Hospital, Pangandaran Regency because the value of $\alpha > \rho$ value (0.05 > 0.000).

Discussion

The results showed that visual acuity (*visus*) in post-cataract surgery patients at Pandega General Hospital, Pangandaran Regency, had the highest frequency, which was in the good category, 33 people (66%). These results indicate that the visual acuity of the respondents is in the normal category after cataract surgery. Cataract surgery is an eye operation that is often performed around the world, because it is the main modality of cataract therapy. The purpose of cataract surgery is to improve visual acuity so as to improve the patient's quality of life (He et al., 2020). Visual acuity is the ability of the visual system to distinguish between various shapes. Optimal vision can only be achieved if there is an intact visual nerve pathway, healthy eye structure and the ability to focus properly (Park et al., 2016)

Research conducted in China using a cohort design involving 126 patients (153 eyes) aims to determine the benefits of cataract surgery on visual acuity and quality of life related to vision in patients with stable diabetic retinopathy (Zhu et al., 2017). One of the results of the study found that at follow-up three months after surgery, there was a significant increase in visual acuity ($p < 0.001$).

Research conducted in Israel, using a cohort design that included 28 patients, aims to determine the benefits of cataract surgery on vision-related quality of life in patients with diabetes (Onakpoya et al., 2009). One of the results of this study found that during follow-up 4 months after surgery, there was a significant increase in visual acuity ($p = 0.02$) . This sharp increase was found in patients aged <75 years. While in patients aged ≥ 75 years, there was no significant increase in visual acuity after undergoing surgery. This condition is

thought to occur because in patients aged <75 years, their glycaemic control will be better, so that diabetic retinopathy does not occur which of course can affect visual acuity (Oktavius & Devella, 2020).

A study conducted in the United States , using a cohort design involving 355 eyeballs, aims to determine changes in visual acuity in patients with diabetes after undergoing cataract surgery (He et al., 2020). The study found that at follow-up 1 year after surgery, eyes without diabetic retinopathy, with mild non-proliferative diabetic retinopathy (NPDR), or with moderate NPDR will experience a significant increase in visual acuity. Meanwhile, eyes with severe NPDR or proliferative diabetic retinopathy also experienced an increase in sharpness, but the increase was not significant. This happens because even though cataracts have been treated, the presence of diabetic retinopathy will still interfere with visual acuity (Péres et al., 2017).

A study conducted in the United States, using a cohort design involving 10,251 patients, aims to determine changes in visual acuity in patients with diabetes after undergoing cataract surgery. The study found that when followed up routinely every two years, the two eyes that received cataract surgery were able to achieve or maintain good visual acuity to the level of vision for driving (Sheppard et al., 2022).

Meanwhile in Indonesia, a study that also raised this problem was found in Surabaya, a study with a cross-sectional design which initially involved 1,155 cataract patients aimed at comparing visual acuity after cataract surgery in patients with and without diabetes. The study found that only 51 patients completed the study series at follow-up 3 months after cataract surgery. The results of the study revealed no difference in visual acuity between patients with diabetes and without diabetes. This shows that both diabetic and non-diabetic patients undergoing phacoemulsification cataract surgery will have equally good visual acuity results (Shaikh et al., 2017).

Based on the research above, it can be assumed that the implementation of cataract surgery can improve visual acuity because the goal of cataract surgery is to improve visual acuity so as to improve the patient's quality of life. From the results of the study also showed that the ability to move in post-cataract surgery patients at Pandega Hospital, Pangandaran Regency, the highest frequency was moderate dependence as many as 19 people (38%), in the independent category as many as 14 people (28%), in the mild dependence category as many as 12 people (24 %) %) severe dependence as many as 5 people (10%) and not least in the total dependence category. or pads. Active ability is an individual's ability to move freely, easily and regularly with the aim of meeting the needs to maintain health (Black, 2014).

Similar results were also shown in a study conducted by Islami (2018) at the eye polyclinic of Dr. Zainoel Abidin Banda Aceh. The study with a cross-sectional design involving 62 elderly people aimed to determine the relationship between visual acuity and the level of independence in senile cataract patients. The results of this study found that 53.2% of other respondents experienced mild dependence.

The way with these results is a study conducted by (Rahmawati et al., 2018) at the Service Center and Assistance for the Elderly (BPPLU), Bengkulu Province. The research with a cross-sectional design involving 36 elderly people aims to determine the relationship between cataracts and the level of independence of the elderly. The results of this study found that 55.6 % of respondents had a mild level of dependence.

Based on the research above, it can be assumed that the proportion of activity abilities requires the help of others, this is due to the condition after cataract surgery.

Bivariate Analysis

Based on the results of the study, it was shown that of the 33 respondents with good visual acuity, almost half as many as 14 people (44.4%) were independent in their ability to do activities, of the 9 respondents with moderate visual acuity, most of them were 6 people (66.7%) who were in the ability activities, out of 8 respondents with poor visual acuity, most of them were 5 people (62.5%) had heavy activity abilities.

From the results of data analysis, the value of the ρ value is 0.000. Based on the results of the data analysis above, it can be concluded that there is a significant relationship between visual acuity and activity ability in post-cataract surgery patients at Pandega General Hospital, Pangandaran Regency because the value of $\alpha > \rho$ value ($0.05 > 0.000$). This relationship is indicated by a correlation value of 0.557 which is included in the moderate category (0.400-0.599). The nature of the relationship between the two variables is that the better the visual acuity of the post-cataract surgery patient, the better the ability to move and conversely the worse the visual acuity of the post-cataract patient, the worse the ability to move.

This visual acuity leads to physical deterioration which results in limited physical mobility which will limit and interfere with daily activities or the Activity of Daily Living (ADL) (Péres et al., 2017). Activity of Daily Living (ADL) is the ability to perform most of the most basic physical tasks and self-care activities which include the ability to bathe, dress, eat, decorate, eliminate defecation and urination, and move place. Disrupted daily activities also affect the level of independence (Kusumawaty et al., 2023);(Yuliana & Setyawati, 2021).

The results of this study are in line with Astari, (2018) research which shows that the majority of research subjects experience mild visual impairment and have a mild degree of dependence. The results of the analysis showed that there was a relationship between visual impairment and independence ($p = 0.0001$; $p < 0.05$). The correlation coefficient (r) shows the number 0.720. A positive value indicates that the direction of the relationship between the two variables is in the same direction as the strength which is included as strong. This shows that the more visually impaired, the more dependent he is with other people.

Similar results were also shown in a study conducted by Islami (2018) at the eye polyclinic of Dr. Zainoel Abidin Banda Aceh. The study with a cross-sectional design involving 62 elderly people aimed to determine the relationship between visual acuity and the level of independence in senile cataract patients.

The results of this study found that 53.2 % of other respondents experienced mild dependence. Respondents with sharp vision who are in the normal category have ADL values that tend to be independent, but respondents with a near blindness level of sharp vision have ADL values that are mildly dependent. Based on the results of Spearman's correlation analysis, it was found that there was a significant relationship between visual acuity and the level of independence in senile cataract patients (p value = 0.047).

The way with these results is a study conducted by (Rahmawati et al., 2018) at the Service Centre and Assistance for the Elderly (BPPLU), Bengkulu Province. The research with a cross-sectional design involving 36 elderly people aims to determine the relationship between cataracts and the level of independence of the elderly. The results of this study found that 55.6 % of respondents had a mild level of dependence. The results of the analysis show that there is a relationship between cataracts and the level of independence of the elderly.

From the results of the research and explanation above, the researchers argue that along with cataract surgery, visual acuity becomes better so that it relates to or influences the activity ability of post-cataract surgery patients.

The data in this study also showed that good visual acuity showed the highest percentage, but the highest proportion of respondents' work ability was not independent but moderately dependent. This is influenced by several factors or *variables* that were not examined by researchers, according to the theoretical framework, namely age, lifestyle, other disease processes or conditions, habits or habits, energy levels and nutritional status.

Conclusion

Based on research activities, it can be concluded that the sharpness of visibility (*visus*) in post-cataract surgery patients at Pandega Hospital, Pangandaran Regency, was the highest in the good category (66%). The highest ability to move in post-cataract surgery patients was in the independent category (28%). There is a significant relationship with the value of $\alpha >$ the value of ρ (0.05 > 0.000) , with a correlation value of 0.557 which is included in the medium category (0.400-0.599).

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