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## Study of Cataract Types and Their Effect on Visual Acuity in a Group of Syrian Patients

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**Abstract Objective:** This study aimed to study the effect of different types of cataracts on visual acuity (VA) in patients reviewing different clinics in Damascus, Syria. **Materials and Methods:** This is a retrospective study composed of 53 patients diagnosed with cataract at different clinics between 1/10/2019 and 30/9/2020. Statistical analysis was done using Excel and SPSS 25.0. We analyzed the data regarding the age, gender, types of cataract and the risk factors of cataract. We divided the patients in this study according to age into four groups as follows: (12-30), (31-50), (51-70) and (>70) years old. We analyzed the data regarding the age, gender, and the effect of different types of cataract on VA. **Results:** This study included 53 patients diagnosed with cataract. We found 3 cases of cataract only in the left eye, 0 cases of cataract only in the right eye and 50 cases of cataract in both eyes. Most of the patients were between 51-70 years old (71.7% of all patients) followed by those older than 70 (15.1% of all patients). 28 patients (52.9% of all patients) were males. The study showed that the nuclear cataract affected the VA was the most, whereas the cortical cataract affected it was the least. The presence of these both types of cataract together (Nuclear+ Posterior sub- capsular) had the worst effect on VA. **Conclusion:** The nuclear cataract affected the VA was the most, whereas the cortical cataract affected it was the least. Nuclear and Posterior sub- capsular cataract together have the worst effect on VA (worse than each type alone).

**Keywords** Cataract, Acuity, Visual, Age, Gender, Syrian

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### Introduction

Cataract is the leading cause of blindness worldwide and is responsible for half of blindness cases, approximately 20 million people are affected by it yearly [1].

Furthermore, cataract has a major load on economy and public health services due to increased aging population and increased cataract surgery services [2].

People over 50 years old are the most affected group and the risk increases significantly with age. To clarify, cataracts are present in 20% of people between 65-74 years old and over 50% of those older than 74 have cataract [3].

Cataract types are mainly divided to nuclear, cortical, posterior sub-capsular, mature (not a type but the final stage for all cataracts) and congenital [3].

Surgery remains the only treatment to cataract and effective surgery can lower the blindness rates, [3] which is composed of the removal cloudy eye lens and then substituting it with a synthetic lens. This surgery is very common worldwide, especially in Germany where about 800,000 people annually have it [4].

Visual acuity (VA) is the major parameter for testing the quality of vision, and it is most commonly tested in our country using Snellen chart [5-6] (Figure 1).



This study aimed to study the effect of different types of cataracts on VA in patients reviewing different clinics in Damascus, Syria.

Up to our knowledge, this study is the first of its kind in Syria.

### Materials and Methods

This is a retrospective study composed of 53 patients diagnosed with cataract at different clinics between 1/10/2019 and 30/9/2020. We excluded the patients who have accompanying diseases that could affect the VA.

This study included 53 patients diagnosed with cataract, 3 cases of cataract only in the left eye, 0 cases of cataract only in the right eye and 50 cases of cataract in both eyes. We analyzed the data regarding the age, gender and the effect of different types of cataract on VA.

We divided the patients in this study according to age into four groups (12-30), (31-50), (51-70) and (>70) years old. We reviewed the effect of different types of cataract on VA, regardless of the age.

Snellen chart were used to test the visual acuity (VA).

Statistical analysis was done using Excel and SPSS 25.0.

### Results

Table 1 shows the age and gender of all patients of this study.

**Table 1:** Demographic variables of this study

Variable	Frequency	percent	Total
Age	12-30	2	3.8
	31-50	5	9.4
	51-70	38	71.7
	>70	8	15.1
Gender	Male	28	52.9
	Female	25	47.1

Table 2 and Table 3 show the visual acuity results using Snellen chart in patients with different types of cataract.

**Table 2:** Visual acuity results in different types of cataract in the right eye of all patients

Type of Cataract	Right Eye visual acuity					Total of cataract types
	1 or less	2-4	5-7	8-10		
Nuclear	N 0	6	3	2	11	
Cortical	N 0	2	0	0	2	
Unknown*	N 2	2	9	4	17	
Posterior sub-capsular	N 0	1	4	0	5	
Mature	N 2	0	0	0	2	
Nuclear+ Posterior sub- capsular+ cortical	N 1	2	0	1	4	
Nuclear+ Posterior sub- capsular	N 1	7	1	0	9	
<b>Total of VA</b>	<b>N 6</b>	<b>20</b>	<b>17</b>	<b>7</b>	<b>50</b>	

\* Cataract types were missing from the records, but their visual acuity test results were available.



**Table 3:** Visual acuity results in different types of cataract in the left eye of all patients

Type of Cataract	Left Eye visual acuity				
	1 or less	2-4	5-7	8-10	Total of cataract types
Nuclear	N 0	5	5	0	10
Cortical	N 0	0	0	2	2
Unknown*	N 1	1	0	3	5
Posterior sub-capsular	N 1	3	4	1	9
Mature	N 3	0	0	0	3
Nuclear + cortical	N 1	3	1	1	6
Nuclear+ Posterior sub- capsular+ cortical	N 0	1	2	0	3
Nuclear+ Posterior sub- capsular	N 5	6	2	2	15
<b>Total of VA</b>	<b>N 11</b>	<b>19</b>	<b>14</b>	<b>9</b>	<b>53</b>

\* Cataract types were missing from the records, but their visual acuity test results were available.

### Discussion

Cataract is an eye condition that causes the lens of the eye to become cloudy. This leads to an impairment of vision, specifically in seeing the details clearly in objects [3].

Cataract is most common in people over 50 years old and the risk rises with age [3]. Furthermore, 20% of people between 65 and 74 years old have cataract. In addition, over 50% of people older than 74 years old have cataract. In our study, most of the patients were between 51-70 years old (71.7% of all patients) followed by those older than 70 (15.1% of all patients) (Table 1).

According to different studies, females are more prone to getting most types of cataract than males. This is most likely to hormonal changes after menopause in women (lower estrogen levels after menopause) [5]. In our study, 28 patients (52.9% of all patients) were males (Table 1).

The main types of cataract are nuclear, cortical, posterior sub-capsular and congenital. In this study, we had 3 cases of cataract only in the left eye, no cases of cataract only in the right eye and 50 cases of cataract in both eyes.

Best VA result is 10/10 and in our study the VA was divided to four groups, poor (1 or less), moderate (2-4), good (5-7) and excellent (8-10).

Martin *et al* [7] demonstrated that regarding VA, the effect of increasing cataract was greatest for nuclear and smallest for cortical opacities, which is the same as of our findings.

We should mention some of the deficiencies in our study; like all retrospective studies, that we could not find the degree of each cataract to determine the severity effect on the VA. This is due to missing data from the records.

### Conclusion

Most of the patients in our study were between 51-70 years old followed by those older than 70. Most of the patients were males. The nuclear cataract affected the VA the most, whereas the cortical cataract affected it the least. Nuclear and Posterior sub- capsular cataract together have the worst effect on VA (worse than each type individually).

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