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# Characteristics of Myopic Patients as a Guide for General Public at Rumah Sakit Islam Siti Rahmah Padang in 2021

**Haves Ashan[1], Zikra Apriani[2], Nurwiyeni[3], Seres Triola[4]**
[1,2,3]*Faculty of Medicine, Universitas Baiturrahmah, Indonesia*
*havesashan@gmail.com, triolaseres@gmail.com*

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## Abstract

*Myopia is a form of refractive error in which rays parallel to the line of sight in the non-accommodating eye are focused in front of the retina. Refractive errors are one of the most common causes of visual impairment worldwide and the second leading cause of treatable blindness. Myopia as a refractive disorder, almost always occupies the top order compared to other refractive disorders. The purpose of this research is toknowing the characteristics of myopic patients at Siti Rahmah Hospital Padang in the period 2021. This study is descriptive with a case series design, the study population is myopia sufferers as many as 329 cases and the sample size is all of these cases.And the results of this study explain that the highest proportion of myopia sufferers is in the age group of 16 - 30 years, which is 165 people or 50.2%, myopia is mostly suffered by women, namely 185 people or 56.2%, while men 144 people or 43 ,8%, most of the patients examined were of the Karo ethnicity, amounting to 137 people (41.6%), that there were many myopia sufferers at the education level of Public High School which amounted to 157 people (47.7%), the percentage of myopia sufferers was The highest percentage was found in the sample who had a job as a student as many as 136 people (41.6%), and the highest percentage of myopia correction results was found in the sample with a full correction of 215 people (65.3%) while 114 people with a percentage of 34, 7% is the result of incomplete correction.*

## I. Introduction

The modern era is identified with the era of digital society. The digital era was born with the emergence of digital, namely the internet network, especially computer and cellphone technology. To address the challenges and harness the opportunities offered by digital technologies during this crisis, participants shared a concern to recognize and protect digital rights in particular around the areas of privacy and inclusion (Hariati, 2021). This can be interpreted as internet users in Indonesia belongs to the category of digital natives group (Gunawan, 2020). The use of digital technology worldwide is increasing, especially since the COVID- 19 pandemic in early 2020 (Yugo, 2021). Today's increasingly sophisticated digital technology makes big changes to the world. Various groups have been facilitated in accessing information, as well as enjoying the facilities of digital technology freely. In the development

of digital technology, of course, there are many impacts that can be felt, both positive and negative. The impact that can be felt, especially for the enthusiastic Indonesian people, is due to internet penetration and the use of smart phones which continues to increase every year. This can affect eye health (Ngafifi, 2014).

The eye is one of the senses that is important for humans, through the human eye absorbing visual information that is used to carry out various activities. However, visual disturbances are common, ranging from mild to severe disturbances that can lead to blindness.Refractive errors are known in the form of myopia, hypermetropia and astigmatism, of all existing refractive errors, myopia ranks first as the most common refractive error suffered by the world's population. Efforts to prevent and overcome visual impairment and blindness need attention.

According to the American Optometric Association (AOA), nearsightedness or myopia is a state of vision in which near objects are clearly visible, but distant objects appear blurred. Nearsightedness occurs when the eyeball is too long or the cornea is too curved. As a result, light entering the eye is not focused properly so distant objects appear blurry. In other words, the image of an object that is seen will fall in front of the retina, resulting in the blurring of the object when looking far away (Kurniawati, 2021).

Myopia has become a global problem that affects the quality of vision, social life, and the economy of sufferers. The incidence of myopia will continue to increase and is accompanied by an increase in the incidence of pathological myopia. Pathological myopia is a pathological consequence of the elongation of the eyeball and will lead to irreversible blindness. Myopia is a refractive error in which light rays from distant objects are focused in front of the retina in the non-accommodating eye. Myopia can be caused by an increase in the axial length of the eyeball, an increase in the curvature of the cornea or lens, a change in the position of the lens and an increase in the index of refraction of the lens. The formation of myopia generally takes place along with the development of the eye and its prevalence increases, especially at the age of 8-12 years, so it is often called school-age myopia.

The age of the patient when myopia begins to manifest will determine the progression and degree of myopia of the patient. Uncorrected myopia is the leading cause of visual acuity in the world. WHO predicts the incidence of myopia in the world will increase every year, in 2020 the incidence of myopia is 33% of the world's population and will increase to 46% in 2014 and 52% in 2020. Especially in Indonesia the prevalence reaches 22.1%. From the existing prevalence based on the calculation of the population in Indonesia with severe low vision in the 5-14 year age group of 14,407 people (Ministry of Health RI, 2014).

Meanwhile, the prevalence in West Sumatra province is 0.8% or 36,099 people. Several studies have shown that myopia is a combination of genetic and environmental factors. The role of genetic factors has been proven by the discovery of myopia-related genes. In addition, the role of genetic factors is also supported by the theory that children born to parents with myopia are more at risk for developing myopia compared to children born to parents without myopia.

Environmental factors that play a role in the occurrence of myopia are work, education, close work, and outdoor activities. These factors do not stand alone but are interrelated with each other. For example, the types of work that involve working close distances will certainly be more at risk of developing myopia. In addition, a person's job is of course closely related to the level of education he has achieved. The higher a person's level of education, the longer he will be exposed to close-range activities such as reading.Sirait, 2021).

In addition, along with the times, there have been changes in learning styles. Students today are required to be able to obtain as much information as possible, so that there is an increase in the use of computers, which is also a form of close work. Other factors, students

and certain types of work will limit the amount of time a person spends outdoors. In fact, outdoor activities can provide a protective effect against the development of myopia.Angelo et al., 2017).

The diagnosis of myopia can be made objectively using retinoscopy or refractometer to determine the approximate power of the lens. Subjective assessment was carried out to determine the best and most comfortable lens power for the patient. Treatment using glasses, contact lenses, or surgery is an option in dealing with refractive errors that occur. Siti Rahmah Islamic Hospital is an Islamic hospital located in Koto Tangah, Padang City. Siti Rahmah Padang Islamic Hospital is a private hospital that provides comprehensive health services.

This hospital also has an internal ophthalmology clinic that serves eye patients so that the Siti Rahmah Islamic Hospital has quite a lot of eye patients, where this hospital also receives referrals from various hospitals in Padang City and several other areas. Based on data from 2019 - 2020, eye patients who visitedHouseSiti Rahmah Islam Hospital as many as 70 people. SoBased on the description of the background above, the researcher is interested in conducting research oncharacteristics of myopic patients at the Siti Rahmah Islamic Hospital in 2020.

## II. Research Methods

This type of research isdescriptive namely looking at the description of each variable to be studied, whileThe sampling in this study was selected using purposive sampling, namely sampling based on the criteria set by the researcher based on the inclusion criteria and exclusion criteria. The inclusion criteria and exclusion criteria of this study are as follows(1)Patients with a diagnosis of myopia who seek treatment atSiti Rahmah Padang Islamic Hospital in 2021 (2)Have complete medical record data. As forThe data analysis used is univariate analysis. Univariate analysis aims to explain or describe the characteristics of each research variable, which is presented in the form of frequency distribution tables and percentages. The data to be analyzed univariately is the respondent's characteristics, namely the respondent's age, gender, education, occupation and degree of myopia.The data obtained is then carried out data processing through the following stages, data checking, data coding data transfer, data tabulation and data cleaning.The data will be processed using the Statistical Program for Social Science (SPSS) software (Basri, 2014).

## III. Discussion

Based on the research that has been carried out aimed at knowing the relationship between age, gender and occupation with the incidence of myopia patients at Siti Rahmah Hospital Padang for the period January-June 2021 in 108 respondents, the authors can describe the results of the research in the exposure below:

### 3.1 Distribution of Frequency of Myopia Patient Visits at Siti Rahmah Hospital, Padang Period January-June 2021 Based on Age, Gender, Occupation

The results showed that the frequency distribution of myopia based on age, gender and occupation can be described as follows:

**Table 1.** Distribution of the Frequency of Visits for Myopia Patients at Siti Rahmah Hospital, Padang Period January-June 2021 Based on Age

| Age | *f* | % |
|---|---|---|
| 46-65 years old | 74 | 68.5 |

| | | |
|---|---|---|
| >65 years old | 34 | 31.5 |
| **Total** | 108 | 100.0 |

Based on the table above, it is found that of the 108 respondents, the most aged 46-65 years are 74 people (68.5%).

**Table 2.** Distribution of Myopia Patient Visits Frequency at Siti Rahmah Hospital, Padang Period January-June 2021 by Gender

| **Gender** | ***f*** | **%** |
|---|---|---|
| Man | 23 | 21.3 |
| Woman | 85 | 78.7 |
| **Amount** | 108 | 100.0 |

Based on table 2 above, it was found that from 108 respondents, the most respondents were female, namely 85 people (78.7%).

**Table 3.** Distribution of Myopia Patient Visits Frequency at Siti Rahmah Hospital, Padang Period January-June 2021 Based on Occupation

| **Profession** | ***f*** | **%** |
|---|---|---|
| Indoor | 45 | 41.7 |
| Outdoor | 63 | 58.3 |
| **Amount** | 108 | 100.0 |

Based on the table above, it is found that of the 108 respondents, the most with outdoor work are 63 people (58.3%).

### 3.2 Relationship between Age and the Incidence of Myopia at Siti Rahmah Hospital, Padang for the Period January-June 2021

The results showed that the relationship between age and myopia at Siti Rahmah Hospital, Padang for the period January-June 2021 can be described asfollowing:

**Table 4.** Relationship between Age and Myopia Incidence at Siti Rahmah Hospital in the period January-June 2021

| **Age** | **myopia** ***f %*** | **No Myopia** ***f %*** | **Amount** ***n %*** | **P Value** |
|---|---|---|---|---|
| 46-65 years old | 36 58.1 | 38 82, 6 | 74 68.5 | |
| >65 years old | 26 41.9 | 8 17.4 | 34 31.5 | |
| Amount | 62 100 | 46 100 | 108 100 | 0.012 |

Based on the table above, it was found that of the 62 myopia patients, the most were 46-65 years old (58.1%) compared to >65 years old (41.9%). The results of the statistical test (chi-square) obtained a value of p = 0.012 (p <0.05), it can be concluded that there is a relationship between age and myopia at Siti Rahmah Hospital, Padang for the period January-June 2021 (Mutti et al., 2012).

### 3.3 Employment Relationship with Myopia Incidence Rate at Siti Rahmah Hospital, Padang Period January-June 2021

The results of the study found that the work relationship with myopia at Siti Rahmah Hospital, Padang for the period January-June 2021 can be described as follows:

**Table 5.** Employment Relationship with Myopia Incidence Rate at Siti Rahmah Hospital, Padang Period January-June 2021

| Profession | myopia *f %* | No Myopia *f %* | Amount *n %* | P Value |
|---|---|---|---|---|
| Indoor | 19 30.6 | 38 82, 6 | 74 68.5 | |
| Outdoor | 37 69.4 | 8 17.4 | 34 31.5 | |
| Amount | 62 100 | 46 100 | 108 100 | 0.012 |

Based on the table above, it was found that out of 62 patients who experienced myopia the most in outdoor work (69.4%) compared to indoor work (30.6%). The results of the statistical test (chi-square) obtained a value of p = 0.012 (p <0.05), it can be concluded that there is a work relationship with myopia at RSI Siti Rahmah Padang in the period January-June 2021. People who spend more time outside are at risk are less likely to develop myopia than people who spend more time indoors. This is because people who are outdoors do not spend more time reading, watching television or playing video games (Saxena et al., 2015).

Based on the research, the results were obtained from 108 respondents, most of whom were aged 46-65 years, namely 74 people (68.5%) at Siti Rahmah Hospital Padang for the period January-June 2021. As age increases, the nature of the ear as one of the organs of the body will also change. change too.It can be seen that myopia based on age is highest at the age of 16-30 years with a comparison in terms of age, namely the higher the age of the myopia sufferer, the lower the frequency of myopia, which indicates that the frequency of myopia is at most around the age of 20 years which then decreases at the age of 45 to 50 years. and increased thereafter. The prevalence of myopia reaches its peak at the age of about 20 years or the third decade after which it shows a gradual decline.The degree of hypermetropia then decreased to 1.0 D at the age of 1 year due to changes in the refractive power of the cornea and lens, as well as an increase in the length of the axis of the eyeball. By the age of 2 years, the proportion of the anterior segment has reached the adult eye, but the refractive surface curve of the lens is about 1.8 D at the age of 3 years to 14 years.

Based on the research, the results were obtained from 108 respondents, the most respondents were female, namely 85 people (78.7%) at Siti Rahmah Hospital in Padang for the period January-June 2021.The sex distribution table shows that more women are around 56.2%. This situation is in accordance with data from the Indonesian Statistics Agency which shows a high ratio of the male population to the female population. However, the high life expectancy in women makes it seem as if the female population is more than the male population. Gender is not a risk factor for myopia. Besides thatResearch in Indonesia states that women suffer from myopia more than men because girls spend more time indoors reading books or watching television (Budiono et al., 2013).

Based on the research, the results obtained from 108 respondents,It can be seen that the education level of most myopia sufferers who came for treatment at Siti Rahmah Hospital, Padang in the period January to June 2021 studied had a high school education level which was found to be around 47.7% and a bachelor's level of around 27.0%. The relationship between education and myopia in this study was associated with excessive close work, it was statistically proven that there was a real relationship between education level. The relationship between increased reading time and refractive status of myopia, the percentage of myopia is more at the higher education level.Near-seeing activities in students can lead to

an increase in myopia progression. Forced eyes can damage the eye itself. Near work activities can be in the form of the habit of seeing at a close distance of more than 5 hours / day or the habit of reading or writing at a distance of less than 30 cm, playing games using cellphones or gadgets and watching television.

It can be seen that most of the myopia patients who were treated as the object of the study, had a job as a student about 41.6%, this is very suitable for close work such as reading and writing. Distribution of high myopia based on the results of full and incomplete correction. Myopia sufferers showed that the full correction results were 65.3% higher than those who could not fully corrected as much as 34.7%. Myopic refractive error still causes problems in handling, where the final result of visual acuity correction still often gives incomplete correction results, especially in patients with high myopia. From the number of samples of patients with refractive errors of 822 people, 329 people were found to be myopia sufferers.Complaints of patients in the form of blurry vision when seeing or reading from a distance and sometimes accompanied by headaches. Clinically, children show a tendency to squint to get a positive pinhole effect (Seang, 2019).

Other reasons for the management of myopia include improving binocular visual comfort, controlling strabismus, and in community ophthalmology preventing the loss of economic productivity associated with uncorrected refractive errors. Several studies have found that uncorrected peripheral hyperopia deficiency can lead to worsening of axial myopia in children who may have other uncorrected refractive errors.

Glasses are the easiest and safest treatment that can be given to correct refractive errors. Glasses are a tool that can be recommended to patients before contact lenses or refractive surgery. High index lenses are an alternative that can be used to correct high refractive errors. Undercorrected myopia has been shown to increase progression due to peripheral and central blur that triggers the growth of the axial length of the eyeball, therefore correction of suboptimal myopia is not recommended.Ong et al., 2019).

Glasses with progressive enhancement lenses were effective in children with esophoria in near vision observed in a study with additive progressive lenses (PALS). One of the possible reasons that bifocal lenses do not inhibit the development of myopia is because children avoid increasing close or responding inappropriately to lens changes, also known as image jumps. Progressive enhancement lenses can reduce power gradually which results in better eyewear wearing comfort, as well as the possibility of clearer vision for a wide range of distances, medium and near (Agca, 2018).

Efforts to slow down the progression of myopia are referred to as control myopia. One of the methods used is using glasses to control progress such as using bifocal glasses and progression enhancement lenses in children. Bifocal lenses allow the patient to have one lens power to see far away and the other lens power to see up close, thus benefiting the patient in certain accommodation and convergence disorders, such as accommodative insufficiency and convergence overload. The relationship of myopia to close work has led to much speculation about the relationship between myopia development and accommodation.

Treatment options to control myopia progression have been evaluated in recent years and are based on various myopia progression hypotheses, such as myopia-related accommodative lag and peripheral defocus. Various treatment approaches such as the use of glasses, contact lenses, and refractive surgery are effective treatment options for gravior myopia to reduce the rate of myopia progression, and there are types of depth-focus lenses which are promising myopia control tools but still require long-term studies.

## IV. Conclusion

Based on the results of research on the characteristics of myopia patients at the Siti Rahmah Islamic Hospital, Padang in 2021, conclusions can be drawneducation is one of the risk factors that can affect the characteristics of people with myopia higher because of the higher learning burden. Socio-economic factors affect the incidence of myopia where you often do near-sight activities. Then the refractive error in myopic patients still poses a problem in handling where the final result of visual acuity correction still often gives incomplete correction results. With resultmost respondents aged 46-65 years, namely 74 people. Respondents with female gender are 85 people, the most respondents with outdoor work are 63 people. There is a relationship between age and myopia at Siti Rahmah Hospital, Padang for the period January-June 2021 (P Value = 0.012). There is a sex relationship with myopia at Siti Rahmah Hospital, Padang for the period January-June 2021 (P Value = 0.025).AndThere is a work relationship with myopia at RSI Siti Rahmah Padang for the period January-June 2021 (P Value = 0.012).

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