

# The Relationship between Knowledge, Information Sources and Lifestyle and Myopia Prevention in Students

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## ABSTRACT

Myopia is a refractive error that occurs when distant objects do not focus properly on the retina. The prevalence of myopia cases has increased over time. This study aims to determine the relationship between knowledge, information sources, lifestyle, and the prevention of myopia in class VIII students at SMP Negeri 2 Lintongnihuta with a sample size of 58 students. The sampling technique is that the entire population is sampled. The type of research used is analytical descriptive research with a cross-sectional design. The results showed that the majority of respondents had sufficient knowledge (46.6%), were male (63.8%), 13 years old (83.3%), obtained information from electronic media (58.6%), style adequate living (46.6%), and myopia prevention not good (70.7%). Based chi-square statistical test, there is a relationship between knowledge ( $p\text{-value} < \alpha$ , namely  $0.025 < 0.05$ ), sources of information ( $p\text{-value} < \alpha$ , namely  $0.002 < 0.05$ ) and lifestyle ( $p\text{-value} < \alpha$ , namely  $0.000 < 0.05$ ) with the prevention of myopia in class VIII students. It is hoped that there will be a need to increase knowledge about preventing myopia among students at SMP Negeri 2 Lintongnihuta, Lintongnihuta District, Humbang Hasundutan Regency.

**Keywords:** knowledge, information sources, lifestyle, myopia

## INTRODUCTION

Myopia is an eye refractive error with the highest prevalence in the world. All age groups can experience myopia, especially teenagers. Myopia (farsightedness) is where distant objects do not fall directly on the retina. Myopia is one of the causes of decreased visual acuity in children aged 8-12 years. Between the ages of 13 and 19, when the body experiences rapid growth, myopia gets worse (Andrias, et al., 2015). Based on data from the World Health Organization (WHO), the most common causes of blindness in the world are refractive errors and cataracts, followed by glaucoma. Of all the existing refractive errors, myopia is ranked first as the most common disorder suffered by the world's population. Almost 90% of people living with myopia are in developing countries (Sobirin & Rina, 2012).

Myopia has a high prevalence in the world. Asia is 70-90%, Europe is 30-40%, and America is 10-20%. Specifically in Indonesia, the prevalence reached 22.1% (Ilyas & Yulianti, 2015). The prevalence of myopia cases has increased over time, and it is estimated that it will increase from 5.2% to 9% in 2050 (Holden et al., 2016). The prevalence of myopia cases in Indonesia alone has reached 48.1% among those aged over 21 years (Wulandari & Mahadini, 2019). The

prevalence of myopia among primary school students increased with age (Xu et al., 2016).

The formulation of the problem in this research is whether there is a relationship between knowledge, sources of information, and lifestyle and the prevention of myopia in class VIII students at SMP Negeri 2 Lintongnihuta. Based on a preliminary survey conducted in one of the educational units in Lintongnihuta District, namely at SMP Negeri 2 Lintongnihuta, on May 11, 2022, where there were 58 class VIII students. Thus, this research aims to determine "the relationship between knowledge, sources of information, and lifestyle with the prevention of myopia in class VIII students at SMP Negeri 2 Lintongnihuta, Lintongnihuta District, Humbang Hasundutan Regency in 2022.

## **METHODS**

The type of research used is analytical descriptive research using a cross-sectional design. The population in this study was all 58 Class VIII students at SMP Negeri 2 Lintongnihuta. In this study, the entire population was sampled, namely 58 people.

### **Data Collection**

Data collection in this research was done by distributing questionnaires with 20 statements to students. If you are willing to be a respondent, you are welcome to sign a letter of consent. This is followed by using a questionnaire in the form of a statement (True/False), which is filled in directly and then handed back to the researcher to check the correctness. Secondary data in this research was obtained from the principal of SMP Negeri 2 Lintongnihut. Tertiary Data Tertiary data is data that comes from valid references.

Previously, validity and reliability tests had been carried out for the instruments that would be distributed to the sample. The validity test aims to determine the extent to which a measure or value shows the level of reliability or validity of a measuring instrument by measuring the correlation between variables in reliability analysis by looking at the corrected item correlation value, provided that if the calculated r-value is  $> r$  table, then it is declared valid and vice versa, where the r table in this study is 0.361.

After measuring validity, it is necessary to measure the reliability of the data and whether the measuring instrument can be used or not. Measuring this reliability uses Cronbach's Alpha formula. Data reliability is an index that shows the extent to which a measuring instrument can demonstrate accuracy and can be trusted using the Cronbach's Alpha method, namely analyzing the reliability of a measuring instrument from one measurement, provided that if the value of r

Alpha > r table, then it is declared reliable (30 samples).

The data analysis techniques carried out are as follows: 1) Univariate Analysis, a table that describes the presentation of data for one variable only; 2) Bivariate Analysis, namely a table that presents data for two variables crosswise to see the relationship between the independent variable and the independent variable. The chi-square statistical test is carried out on the dependent variable. For decision-making, chi-square comparisons can be made using the table arithmetic test: If the calculated chi-square is greater than the chi-square,  $H_0$  is rejected,  $p < \alpha$  with a constant ( $\alpha = 0.05$ ). If the calculated chi-square is smaller than the table chi-square, then  $H_0$  is accepted  $p\text{-value} > \alpha$  with certainty ( $\alpha = 0.05$ ).

## RESULTS

### Analysis Univariate

Based on the research results regarding the relationship between knowledge and myopia prevention in class VIII students at SMP Negeri 2 Lintongnihuta. Univariate analysis was carried out to describe the presentation of data from several variables in the form of a frequency distribution, including knowledge, gender, age, information sources, and lifestyle.

**Table 1. Frequency Distribution of Respondent Characteristics**

| No | Characteristics   | Frequency (f) | Percentage (%) |
|----|-------------------|---------------|----------------|
| 1  | Knowledge         |               |                |
|    | Good              | 8             | 13,8           |
|    | Enough            | 27            | 46,6           |
|    | Not enough        | 23            | 39,7           |
| 2  | Gender            |               |                |
|    | Male              | 37            | 63,8           |
|    | Female            | 21            | 36,2           |
| 3  | Age               |               |                |
|    | 13 years          | 53            | 88,3           |
|    | 14 Years          | 5             | 8,3            |
|    | 15 Years          | 0             | 0              |
| 4  | Resources         |               |                |
|    | Health workers    | 3             | 5,2            |
|    | Mass media        | 21            | 36,2           |
|    | Electronic Media  | 34            | 58,6           |
| 5  | Lifestyle         |               |                |
|    | Good              | 10            | 17,2           |
|    | Enough            | 27            | 46,6           |
|    | Not Enough        | 21            | 36,2           |
| 6  | Myopia Prevention |               |                |
|    | Not Good          | 17            | 29,3           |
|    | Good              | 41            | 70,7           |

Based on the frequency distribution Table above, it was found that the majority of respondents' knowledge was sufficient, as many as 27 people (46.6%). The gender variable is that the majority are male, 37 people (63.8%). Most respondents' age variables were 13 years old, 53 people (83.3%). Variable sources of information: The majority of information sources obtained by respondents were from electronic media, 34 people (58.6%). Most lifestyle variables were sufficient for 27 people (46.6%). For myopia prevention variables, the majority were not good, as many as 41 people (70.7%).

### Analysis Bivariate

After conducting univariate analysis, further analysis was carried out, namely bivariate analysis obtained from the two variables using categorical data tested using the Chi-square test. The results of the data collection, which was distributed to respondents through research using primary data regarding the relationship between knowledge, sources of information, and lifestyle with the prevention of myopia. Available seen in the Table as follows.

**Table 2. The Relationship between Knowledge and Myopia Prevention**

| No | Knowledge  | Myopia Prevention |      |          |      | Total | df  | P-value |       |
|----|------------|-------------------|------|----------|------|-------|-----|---------|-------|
|    |            | Good              |      | Not Good |      |       |     |         |       |
|    |            | N                 | %    | N        | %    |       |     |         |       |
| 1  | Good       | 5                 | 62,5 | 3        | 37,5 | 8     | 100 | 2       | 0,025 |
| 2  | Enough     | 9                 | 33,3 | 18       | 66,7 | 27    | 100 |         |       |
| 3  | Not enough | 3                 | 13   | 20       | 87   | 23    | 100 |         |       |

The results of the bivariate analysis from the Table above obtained a comparison of the chi-square table, where it is known that the p-value is 0.025 with df= two and  $\alpha= 0.05$ . The conclusion from the Table above is based on a comparison of the chi-square test at a confidence level of 95% ( $\alpha= 0.05\%$ ) and df= 2. It is obtained that P-value <  $\alpha$  (0.025 < 0.05), then Ho is rejected. Ha is accepted, so there is a relationship. There is a significant relationship between knowledge and myopia prevention in class VIII students based on the level of knowledge at SMP Negeri 2 Lintongnihuta.

**Table 3. The Relationship between Information Sources and Myopia Prevention**

| No | Source Information | Myopia Prevention |      |          |      | Total | df  | P-value |       |
|----|--------------------|-------------------|------|----------|------|-------|-----|---------|-------|
|    |                    | Good              |      | Not Good |      |       |     |         |       |
|    |                    | N                 | %    | N        | %    |       |     |         |       |
| 1  | Health workers     | 2                 | 66,7 | 1        | 33,3 | 3     | 100 | 2       | 0,003 |
| 2  | Mass media         | 11                | 52,4 | 10       | 47,6 | 21    | 100 |         |       |
| 3  | Electronic Media   | 4                 | 11,8 | 30       | 88,2 | 34    | 100 |         |       |

The results of the bivariate analysis from the Table above obtained a comparison of the chi-square table, where it is known that the p-value is 0.003 with df 2 and  $\alpha=0.05$ . The conclusion from the Table above is based on a comparison of the chi-square test at the 95% confidence level ( $\alpha=0.05\%$ ) and df 1 obtained p-value  $< \alpha$  ( $0.003 < 0.05$ ), then  $H_0$  is rejected.  $H_a$  is accepted, so there is a relationship. There is a significant relationship between knowledge and prevention of myopia in class VIII students based on information sources at SMP Negeri 2 Lintongnihuta.

**Table 4. The Relationship between Lifestyle and Myopia Prevention**

| No | Lifestyle  | <u>Myopia Prevention</u> |      |          |      | Total | df  | P-value |
|----|------------|--------------------------|------|----------|------|-------|-----|---------|
|    |            | Good                     |      | Not Good |      |       |     |         |
|    |            | N                        | %    | N        | %    | N     | %   |         |
| 1  | Good       | 10                       | 100  | 0        | 0    | 10    | 100 |         |
| 2  | Enough     | 7                        | 24,1 | 22       | 75,9 | 29    | 100 | 2       |
| 3  | Not enough | 0                        | 0    | 19       | 100  | 19    | 100 | 0,000   |

From the results of the bivariate analysis from the Table above, a comparison of the chi-square table is obtained, where it is known that the p-value is 0.000 with df 2 and  $\alpha=0.05$ . The conclusion from the Table above is based on a comparison of the chi-square test at the 95% confidence level ( $\alpha=0.05\%$ ) and df 2 obtained p-value  $< \alpha$  ( $0.000 < 0.05$ ), then  $H_0$  is rejected and  $H_a$  is accepted so there is a relationship. There is a significant relationship between knowledge and prevention of myopia in class VIII students based on lifestyle at SMP Negeri 2 Lintongnihuta.

## DISCUSSION

From the results of the research carried out, matters related to the relationship between knowledge and myopia prevention in class VIII students at SMP Negeri 2 Lintongnihuta, Lintongnihuta District, Humbang Hasundutan Regency, 2022 will be discussed.

### The Relationship between Knowledge and Myopia Prevention

Based on the chi-square test at a confidence level of 95% ( $\alpha=0.05\%$ ) and df 1, it is obtained that p-value  $< \alpha$  ( $0.025 < 0.05$ ), then  $H_0$  is rejected and  $H_a$  is accepted so that there is a significant relationship between knowledge and prevention. Myopia in class VIII students based on age at SMP Negeri 2 Lintongnihuta. Knowledge results from "knowing," which occurs after people sense particular objects. Sensing occurs through the senses of sight, hearing, smell, taste, and touch. Based on research conducted in the field, researchers assume that

knowledge is related to preventing myopia (nearsightedness). It can be seen that the theory in the literature review is the same as the results obtained by researchers, namely respondents whose prevention was not good, namely students who had less knowledge.

On the other hand, students with good prevention are students with good knowledge. A good level of knowledge in a person will make that person more oriented towards preventive action, have a good health status, and know more about health problems. The results of this research are in line with research conducted by Silaban in Onan Ganjang District in 2021, where the research results stated that there was a significant relationship between junior high school student's knowledge and behavior to prevent exposure to myopia ( $p=0.000$ ;  $p<0.05$ ).

### **The Relationship between Information Sources and Myopia Prevention**

Based on the chi-square test at a confidence level of 95% ( $\alpha= 0.05\%$ ) and df 1, it is obtained that  $p\text{-value} < \alpha$  ( $0.002 < 0.05$ ), then  $H_0$  is rejected and  $H_a$  is accepted so that there is a significant relationship between knowledge and myopia prevention, for class VIII students based on information sources at SMP Negeri 2 Lintongnihuta.

Information sources such as TV, radio, newspapers, magazines, health workers, and so on greatly influence the formation of people's opinions and beliefs. More information can influence or increase a person's knowledge, and with knowledge, it creates awareness so that, ultimately, a person will behave based on their knowledge (Notoatmodjo, 2012). According to Hibatullah (2022), the development of information media is also commensurate with its increasingly strong influence on the current world of globalization. The influence of the media now even plays a role in shaping a person's character and lifestyle. According to researchers' assumptions, sources of information heard or seen can increase a person's knowledge so that every action taken is based on the knowledge received and heard from health workers, the mass media, and the electronic media.

### **The Relationship between Lifestyle and Myopia Prevention**

Based on the chi-square test at a confidence level of 95% ( $\alpha= 0.05\%$ ) and df 1, it is obtained that  $p\text{-value} < \alpha$  ( $0.000 < 0.05$ ), then  $H_0$  is rejected and  $H_a$  is accepted so that there is a significant relationship between knowledge and prevention. Myopia in class VIII students based on lifestyle at SMP Negeri 2 Lintongnihuta. The results of this research align with research conducted by Pranoto and Masduki (2017) entitled the relationship between lifestyle and myopia in students, where the results of his research showed a significant relationship between lifestyle and myopia in students. (Huang et al., 2023) show implementation of school-

based myopia preventive health education improves myopia-related knowledge, attitudes, and skills among Chinese high school students. Awareness of myopia sensitivity, myopia-related behavioral patterns, and the health and self-efficacy effects of myopia, along with reducing screen time, can help prevent myopia (Wang et al., 2021).

## CONCLUSION

Based on the research results, it can be concluded that there is a relationship between knowledge, sources of information, and lifestyle with the prevention of myopia in class VIII students at SMP Negeri 2 Lintongnihuta, Lintongnihuta District, Humbang Hasundutan Regency 2022. It is recommended that students increase their knowledge about preventing myopia and be aware of the importance of maintaining eye health to prevent myopia (nearsightedness).

## LIMITATION

The limitation of this research is that the research time needs to be longer.

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