RISK FACTORS AFFECTING THE INCIDENCE OF COMPUTER VISION SYNDROME (CVS) IN HIGH SCHOOL STUDENTS
(Study at SMAN 2 and SMA Muhammadiyah 3 Jember, East Java, Indonesia)

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1. Introduction

Objectives

Computer vision syndrome (CVS) is a set of various eye and vision symptoms that results from using electronic gadgets. Dry eyes, one of the common symptoms of CVS that happens among students, is caused by electronic gadgets exposure. This study was carried out to analyze the difference among mild, moderate and heavy exposure risk factor for using electronic gadget and the incidence of dry eyes.

2. Methods

An observational cross-sectional study using quota sampling of 100 High School students (50 students for each school) in August 2020 was performed using questionnaire to identify daily use of electronic gadget (hours per day) and history of using electronic gadget (years). Furthermore, a classification of mild, moderate, and heavy exposure was used. Dry eyes was diagnosed using tear break up time test (TBUT). TBUT score of <10 seconds was diagnosed as dry eyes.

3. Results and Discussion

Multiplication of 2 categories between the amount exposure to heV ray by the period for using gadget.

<table>
<thead>
<tr>
<th>The period for using gadget</th>
<th>The amount of exposure to heV ray (hour)</th>
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</thead>
<tbody>
<tr>
<td>1-4 hours (1)</td>
<td>1-2-3-4</td>
</tr>
<tr>
<td>5-8 hours (2)</td>
<td>2-4-6-8</td>
</tr>
<tr>
<td>9-12 hours (3)</td>
<td>3-6-9-12</td>
</tr>
<tr>
<td>&gt;12 hours (4)</td>
<td>4-8-12</td>
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</tbody>
</table>

Mild exposure, if the result multiplication between the 2 categories is 1-2. Moderate exposure, if the result multiplication between the 2 categories is 3-5. Heavy exposure, if the result multiplication between the 2 categories is 6-12.

4. Conclusion

Minimal exposure to electronic gadgets still can risk the development of CVS in young age with normal tear production.

References


Samples that met the inclusion criteria were 94 students. A total of 82 students experienced dry eyes. There were no significant differences among mild vs moderate vs heavy exposure for using the electronic gadgets to the incidence of dry eyes in High School students in Jember (p=0.836). As for CVS symptoms, such as decreased vision, can be caused by using of electronic gadgets for >1 hour. CVS symptoms are also reported to occur frequently in students who use computers for >2 hours a day.