Effect of watching autonomous sensory meridian response (AMR) video to heart rate, blood pressure and respiratory rate in students of Architectural Engineering, Universitas Syiah Kuala, Banda Aceh, Indonesia

INTRODUCTION
Vital signs are an important part of the body, which is useful for informing a person's general state. Three of these are heart rate, blood pressure, and respiratory rate. Some medical conditions such as anxiety, stress, and depression are often accompanied by changes in heart rate values, blood pressure, and respiratory rate. Therefore, controlling heart rate, blood pressure, and respiratory rate is very beneficial in some medical conditions.

Autonomous Sensory Meridian Response (ASMR) is an experience in which a person feels calm and tingling, a tingling sensation like electricity radiating from the head and neck. The spread of these sensations can culminate in the peripheral parts of the body. ASMR experiences are caused by a stimulus or trigger which is usually an audio-visual stimulus. ASMR has been experienced by humans since they were young. However, the sensations that are felt are difficult to identify so that most people do not realize that they have known and experienced ASMR before.

Several previous studies have concluded that ASMR videos can help relieve symptoms of anxiety, depression, and insomnia. These conditions are closely related to hormonal changes that affect brain function. One of the positive hormones that greatly affects brain function is the hormone oxytocin. Oxytocin itself has been shown to have a role in providing an anxiolytic effect or as a sedative. Changes in nervous system activity induced by oxytocin can lower a person's heart rate resulting in a feeling of calm. In addition, increasing parasympathetic nerve activity can also reduce a person's blood pressure and respiratory rate.

Based on the above, we are interested in knowing the effect of watching ASMR videos on blood pressure and respiratory rate.

Methods: Double-blind pre-experimental study with a one-group pretest-posttest design. The sample consisted of 30 students who met the inclusion and exclusion criteria. All samples were asked to rest for 30 minutes before treatment and then watch the ASMR video for 3 minutes. Heart rate, blood pressure, and respiratory rate data were calculated before and after treatment. The data analysis was carried out using the Wilcoxon test.

Results: Vital sign data of all samples before treatment were obtained within normal limits. After watching the ASMR video, the results of data analysis using the Wilcoxon test showed that there were significant differences in heart rate (p = 0.013), systolic blood pressure (p = 0.026), and diastolic blood pressure (p = 0.00) after watching the ASMR video. While the p-value on the respiratory rate data is 0.349 which means there is no significant difference in the respiratory rate after watching the ASMR video.

Conclusion: In this study, evidence has been obtained that watching ASMR videos can reduce heart rate and blood pressure. However, the respiratory rate did not give significant results because several factors. More research is needed to determine the exact effects of watching ASMR videos.

Keywords: autonomous sensory meridian response, vital sign, autonomic nervous system, oxytocin.


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rate.

**METHODS**

This research is a double-blind pre-experimental study with a one-group pretest-posttest design. This research was conducted at the Faculty of Medicine, Syiah Kuala University in August 2020.

The sample in this study were students of the Faculty of Architectural Engineering, Syiah Kuala University aged 18-21 years, who were not currently taking medicine (cardiovascular drugs, psychotropic drugs, analgesics, antipyretics, antibiotics, and diuretics) in the last 48 hours and were not active smokers. Because the research was conducted during the COVID-19 pandemic, the number of samples was determined by total sampling, only students in Banda Aceh alone.

a. The sample preparation before treatment

All samples were asked to take a rest for 30 minutes before treatment. The sample will watch the ASMR video in a room installed with air conditioning measuring 3x3 meters. The samples are watching in a sitting position.

b. ASMR Video

The content of ASMR videos can vary according to the scenario desired by the video creator. In general, ASMR videos utilize 4 types of dominant triggers, namely whispers, special treatment roleplay, crisp sound, and slow movements. This study used ASMR video with a duration of 3 minutes with triggers in the form of special treatment roleplay as an intervention. The video is shown for 3 minutes via a 6.3-inch smartphone with a resolution of 2280 × 1080 megapixels. The video used can be downloaded via the link https://www.youtube.com/watch?v=mdGleunr-qo&t=19s

c. Data collection before and after treatment

Blood pressure measurements were carried out by fourth-year medical students using a mercury sphygmomanometer. Heart rate is calculated using a fingertip pulse oximeter. As for the respiratory rate, the respiratory rate is calculated in units of bpm by observing volunteers in one minute.

d. Data analysis

The data analysis of this research was carried out using SPSS version 25.0 (Armonk Corporation, NY, USA). Paired sample T-test was used to compare vital sign parameters before and after ASMR video exposure, if data were not normally distributed Wilcoxon Signed Rank test will be used. All values considered significant if p<0.05.

**RESULTS**

Data were collected on 30 students (15 male and 15 female) with. The age distribution of the samples is shown in Table 1.

After resting for 30 minutes, sample vital signs were measured before watching the ASMR video (Table 2). ASMR video was provided by the researcher according to the link mentioned. After watching for 3 minutes, the measurement results are obtained as in Table 2. In Table 2, it is found that all vital signs of the sample before treatment are within normal limits according to age. After watching the ASMR video, it was found that all vital signs except for the respiratory rate decreased. And it is also in accordance with statistical analysis with the Wilcoxon test where heart rate, systolic blood pressure, and diastolic blood pressure have a value of p<0.05.

**Table 1. Sample Characteristics**

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Male</th>
<th>Female</th>
<th>Total (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>18 years old</td>
<td>1</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>19 years old</td>
<td>7</td>
<td>5</td>
<td>12</td>
</tr>
<tr>
<td>20 years old</td>
<td>2</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>21 years old</td>
<td>5</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>15</strong></td>
<td>15</td>
<td><strong>30</strong></td>
</tr>
</tbody>
</table>

**Table 2. Comparison of vital signs before and after watching ASMR**

<table>
<thead>
<tr>
<th></th>
<th>Minimum Rate</th>
<th>Maximum Rate</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart Rate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before</td>
<td>61</td>
<td>103</td>
<td>78.03</td>
<td>10.549</td>
<td>0.013</td>
</tr>
<tr>
<td>After</td>
<td>57</td>
<td>97</td>
<td>74.27</td>
<td>12.230</td>
<td></td>
</tr>
<tr>
<td>Systolic Blood Pressure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before</td>
<td>100</td>
<td>122</td>
<td>115.33</td>
<td>6.310</td>
<td>0.026</td>
</tr>
<tr>
<td>After</td>
<td>100</td>
<td>120</td>
<td>113.57</td>
<td>7.248</td>
<td></td>
</tr>
<tr>
<td>Diastolic Blood Pressure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before</td>
<td>59</td>
<td>100</td>
<td>75.63</td>
<td>8.088</td>
<td>0.00</td>
</tr>
<tr>
<td>After</td>
<td>50</td>
<td>100</td>
<td>66.90</td>
<td>9.813</td>
<td></td>
</tr>
<tr>
<td>Respiratory Rate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before</td>
<td>11</td>
<td>25</td>
<td>16.73</td>
<td>3.841</td>
<td>0.349</td>
</tr>
<tr>
<td>After</td>
<td>12</td>
<td>28</td>
<td>17.23</td>
<td>3.794</td>
<td></td>
</tr>
</tbody>
</table>
DISCUSSION
This study involved samples in the age range 18-21 years, where the characteristics of the vital sign data obtained in this study showed normal vital sign values for that age group. Normal blood pressure for adults over 18 years of age is 120/80 mmHg and normal heart rate in adults ranges from 60-100 bpm. In addition, the respiratory rate can also decrease with age. In adults, the normal respiratory rate ranges from 16-20 bpm.2-9 Results of analysis of heart rate and blood pressure data obtained p-value <0.05, which means that there is a significant difference in heart rate after watching ASMR videos. After watching the ASMR videos, the heart rate values tended to decrease more than the heart rate values before watching the ASMR videos. This study is supported by the results of several previous studies, watching ASMR videos will reduce heart rate.3,10-13 This is caused by changes in the activity of the parasympathetic autonomic nervous system induced by the hormone oxytocin, causing a decrease in heart rate.12

In addition, oxytocin will also play a role in controlling smooth muscle in the walls of blood vessels. Impulses sent through the cardiovascular center can cause contraction or dilation of blood vessels. Activation of the parasympathetic nervous system can cause blood vessels to dilate. When the parasympathetic nervous system's activity is more dominant, the heart rate, which is influenced by the activity of the vagus nerve, will also decrease. A decrease in the value of the heart rate can decrease the value of the cardiac output. This can cause the blood pressure value to decrease.12

In this study, watching ASMR videos did not significantly affect the respiratory rate with a value of p = 0.349. The oxytocin released after watching AMSR videos can have a sedative effect, causing a rest-and-digest response. The rest-and-digest response is a response in which the activity of the parasympathetic nervous system is more dominant than the activity of the sympathetic nervous system. The rest-and-digest response causes a slower respiratory rate.12 In this study, if the data is considered individually, it can be seen that 16 samples experienced an increase in respiratory rate and 13 samples experienced a decrease in respiratory rate. There is a condition in which increased activity of the parasympathetic nervous system can also cause airway constriction. Airway constriction can cause the respiratory rate to increase as compensation for the body to deliver sufficient oxygen to the organs that need it.12 This response can be seen in 16 samples after watching the ASMR video. The difference on both sides of the sample respiration rate after watching the ASMR video can occur due to different physiological reactions of the samples. The researcher also believes that the research is adjacent to the anatomy practicum room, which may smell the formaldehyde. Formalin is a compound that can irritate the respiratory tract, especially the upper respiratory tract.14

The limitation of this study is the small number of samples and the majority of the samples in this study are watching ASMR videos for the first time. This will cause a different reaction from people who are used to watching ASMR videos. Therefore, the researchers hope for future research to form groups for people who are used to watching ASMR videos and those who are watching ASMR videos for the first time.

CONCLUSION
In this study, evidence has been obtained that watching ASMR videos can reduce heart rate and blood pressure. However, the respiratory rate did not give significant results because the location of the experimental room was close to the medical faculty anatomy practicum room. More research is needed to determine the exact effects of watching ASMR videos.

CONFLICT OF INTEREST
No potential conflicts of interest were declared.

FUNDING
This study doesn't receive any specific grant from the government or any private sectors.

ETHICAL CONSIDERATION
This study has been approved by the Ethical Committee of the Faculty of Medicine, Syiah Kuala University/Dr. Zainoel Abidin, Indonesia with number 131/EA/FK-RSUDZA/2020.

AUTHOR CONTRIBUTION
All authors have an important role in the concept, research design, and data analysis. Ratna Idayati and Dian Adi Syahputra prepared the manuscript until the final revision. Liesa Sufani collected samples and prepared treatments for all samples.

REFERENCES


