Eye and Neck Relaxation Training Using the 20-20-20 Rule to Prevent Computer Vision Syndrome and Text Neck Syndrome Due to Binge-Watching

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ABSTRACT

Binge-watching is an activity of watching between two and six episodes of a TV show in one sitting. This activity is mostly carried out by students and teenager. At FKM USU, many students binge-watch, and most of them do it because they want to overcome stress. Binge-watching that is done incorrectly will increase a person's risk of suffer various non-communicable diseases due to reduced activity and snacking while binge-watching. This activity can also increase a person's risk of suffering from Text Neck Syndrome and Computer Vision Syndrome because when someone binge-watches they tend to watch with the wrong posture and are reluctant to stop staring at the screen of an electronic device for hours. Programs or activities must be held within FKM USU to prevent students from suffering from Computer Vision Syndrome and Text Neck Syndrome due to binge-watching. This community service activity was carried out at FKM USU, by giving Eye and Neck Relaxation Training Using the 20-20-20 Rule to 27 participants with lecture and demonstration methods. Participants were also given pre-tests and post-tests and also carried out simulations to assess participants' understanding. Based on the pre-test and post-test results, of the 27 participants, only 19 (70.37%) increased their knowledge. Based on the simulation results, all participants got a score of 100, it can be concluded that the eye and neck relaxation training using the 20-20-20 rule that has been implemented can increase students' knowledge and skills about the eyes and neck relaxation training using the 20-20-20 rule.

Keyword: Binge-Watching, Computer Vision Syndrome, Text Neck Syndrome, 20-20-20 rule

1. Introduction

Binge-watching was first introduced by the Video on Demand (VOD) service Netflix in 2013, which was defined as the activity of watching between two and six episodes of a TV show in one sitting [1]. Based on a survey conducted by Deloitte, those who watch the most films (70%) are teenagers aged 14 to 20 years, and 91 percent binge-watch [2]. This is in line with the results of research conducted by Fernandes & Pinto, which revealed that most students (68%) admitted to spending more than two hours watching films [3].

At the Faculty of Public Health, Universitas Sumatera Utara (FKM USU), based on the results of Umam research on 123 FKM USU students, 108 people binge-watched [4]. Most students (81.5%) do Binge-Watching to overcome their stressful situations. This is in line with the opinion of Kaufman, who states that binge-watching is often done to reduce stress, provide valuable insight about specific topics, or encourage someone to socialize by watching with friends or family members [5].

It is just that binge-watching done incorrectly will cause health problems. Several health problems arise, such as increasing the risk of developing various diseases (heart disease, diabetes, osteoporosis, and obesity) because when someone binge-watches, their physical activity decreases [6] coupled with the habit of snacking

on high-calorie foods [7]. Increases the risk of getting Text Neck Syndrome [8] and Screen fatigue/Computer Vision Syndrome [9,10] because when someone is binge-watching, they tend to watch with a wrong posture and reluctant to stop staring at the screen of an electronic device for hours. They become addicted and anxious if they miss even just one episode of the series they are watching [11,12], which ultimately disrupts the sleep cycle and makes the body more tired when watching until they lose track of time until midnight or even morning [13.14].

Based on the results of Umam's research [4], of the 108 FKM USU students who binge-watched, 48.1% (52 people) were already at the addiction stage (cannot wait to continue watching their favorite TV series and stayed up late to watch TV series), even 19 .4% (21 people) of them fall into the high addiction category. Of the 52 people who were at the stage of binge-watching addiction, 67.3% (35 people) often snacked, and 42.3% (22 people) were obese. Therefore, a program is needed to prevent the negative impact of binge-watching from getting more significant.

FKM USU has health center facilities, group exercise activities every Friday, and a Counseling Unit. If this is used well by students, it will reduce the risk of heart disease, diabetes, osteoporosis, obesity, and binge-watching addiction. Meanwhile, prevention of computer vision syndrome and text neck syndrome has never been done. Based on the problem analysis above, programs or activities must be held within FKM USU to prevent students from suffering from Computer Vision Syndrome and Text Neck Syndrome due to binge-watching.

2.   Method

2.1 Time and Place
Community service activities are carried out for three months (June to August), from making proposals, preparing activities, implementing activities, and creating community service outputs. This community service activity was carried out at FKM USU, located at Jl. University No.21 USU Medan Campus. The training can be held on Thursday, August 22, 2024, from 10.00 – 11.00 WIB.

2.2 Population and Sample
The population in this service activity is all students who binge-watched from the results of Umam research (2024), totaling 108 people. The sample in this service is the entire population. However, due to constraints on lecture time, only 27 students were willing to participate in the service.

2.3 Implementation
In July 2024, the community service team cooperated with FKM USU regarding plans for service activities. The service will only be carried out for one day (Thursday, August 22, 2024) at the location provided by the FKM USU (Ruang 1). Before the lecture, participants were asked to complete a 10-minute pre-test. Then, continue with a lecture for 15 minutes and a demonstration of eye and neck relaxation for 5 minutes. After the relaxation demonstration, a 15-minute discussion session was opened. After the discussion, participants were asked to complete a 10-minute post-test. The training ended with a 10-minute simulation and a group photo.

2.4 Work Procedure
1. Socialization of service programs to USU FKM
   The community service team conducted outreach to FKM USU regarding plans for community service activities in July 2024.
2. Pre-test on all training participants
   The students in the sample filled out a pre-test questionnaire regarding binge-watching, its negative impacts, and preventive measures, before the training was carried out.
3. Training
   After carrying out the pre-test, students received training using lecture methods and eye and neck relaxation demonstrations.
4. Post-test on all training participants
   After the training activities are completed, the training participants carry out a post-test to find out the extent to which their knowledge has increased after the training was carried out.
5. Simulation for training participans
   After completing the post-test, a simulation was carried out to see the application of this knowledge in the form of eye and neck relaxation skills.

3.   Result and Discussion

The service team socialize the service program in July 2024. Based on the results of this socialization, the training can only be held after August 19, 2024, because from July to mid-August 2024, many students will still not be in Medan City due to lectures in the odd semester of 2024 /2025 hasn't started yet. Based on the direction of the Deputy Dean I, community service activity should not interfere with students' lecture time. Therefore, the service team rearranged and adjusted the training schedule and materials according to the socialization results.

At the time of the training, 27 participants came. Participants who have just arrived immediately fill out the Pre-test and are given a training kit provided by the service team. The training was opened by the Head of Community service, Namora Lumongga Lubis. M.Sc., Ph.D. This was followed by material about binge-watching and computer vision and text neck syndrome explained by Dr. Arfah Mardiana Lubis, S.Psi, M.Psi.

Figure 1. Opening and material explanation for participans

After the explanation, the practice with simulation was carried out so that the participants became more skilled in eye and neck relaxation using the 20-20-20 rule, then continued discussions with the participants.

Figure 2. Participants doing simulation of Eye and neck relaxation
using the 20-20-20 rule

The final stage of training is the evaluation of training results. Following the training objectives, a review was carried out with a post-test to determine the extent to which participants' knowledge increased after the training was carried out. A simulation was conducted to see the application of this knowledge in the form of eye and neck relaxation. Based on the pre-test and post-test results, of the 27 participants, only 19 (70.37%) increased their knowledge. So, it can be stated that the target of at least 90% of participants increasing their understanding has not been achieved.

Table 1. The results of participants knowledge and abilities of eyes and neck
relaxation training using the 20-20-20 rule

No.	Pre-test Score	Post-test Score	Knowledge Increases	Simulation Score
1	60	60	No	100
2	90	90	No	100
3	70	90	yes	100
4	70	80	yes	100
5	40	80	yes	100
6	50	70	yes	100
7	50	100	yes	100
8	70	100	yes	100
9	70	90	yes	100
10	50	60	yes	100
11	60	70	yes	100
12	60	60	No	100
13	60	70	yes	100
14	70	80	yes	100
15	50	80	yes	100
16	60	60	No	100
17	60	100	yes	100
18	70	80	yes	100
19	70	70	No	100
20	80	90	yes	100
21	80	90	yes	100
22	60	60	No	100
23	70	80	yes	100
24	90	90	No	100
25	70	90	yes	100
26	100	100	No	100
27	90	100	yes	100

However, if we look at the post-test scores of all participants, which were 60 and above, and based on the simulation results, all participants got a score of 100, it can be concluded that the eye and neck relaxation training using the 20-20-20 rule that has been implemented can increase FKM USU students knowledge and skills about the eyes and neck relaxation using the 20-20-20 rule.

Ninety-one percent of Gen Z, 86 percent of millennials, and 80 percent of Gen X say they binge-watch TV shows. Binge-watching millennial and Gen X consumers view about seven episodes of a TV series in a single sitting, which exceeds the average number of episodes for Gen Z which is six episodes [2].

Adolescence and childhood are marked by periods of fast growth, and extended and excessive use of cellphones or computers can result in a variety of health difficulties, however it is commonly assumed that this sort of problem occurs more frequently in adults [8].

Overuse of technology can lead to hours of uninterrupted screen time. The outcome is a primary near-vision focus, which affects eye development and increases near-vision stress (e.g., greater convergence and accommodative dysfunction), increasing the likelihood of developing early-onset myopia [9].

College students are strongly motivated to binge-watch to gratify their needs of belonging to friends and peer group, escape reality, and entertainment and curiosity. Friends and peers group can be considered as the primary cause and most dominantly makes someone binge-watching. This is due to several motives such as his friends expecting or advising him to do it, because it is a topic of discussion with friends, and wanting to be the first person to watch the entire series among his friends. Students also tend to binge-watch because they want to escape from reality and forget the worries and problems that are being faced [3].

A study provides preliminary evidence that modern viewing styles such as binge-watching may negatively impact overall sleep quality, and identified pre-sleep cognitive arousal as the explanatory mechanism. This research also shows that A higher frequency of binge-watching was associated with poorer sleep quality, increased fatigue, and more insomnia symptoms [13].

Hismayanti, Herlina Muin, & Rini Anggraeny, in their research, stated that there was an effect between binge-watching on sleep quality in UM Parepare students [14]. This is because students often do this viewing activity for hours and tend to watch additional episodes after the previous episode ends or continues. This causes them to spend more time watching, even late at night, which can reduce their sleep time. So, their sleep quality decreases. Not only that, binge-watching also has an effect on fatigue among UM Parepare students. This can be caused by students' bad habits when watching marathons, which are usually in the same position and staring at the screen for a long period of time. Fatigue that occurs in students is also due to the habit of watching late at night which can damage the quality of their sleep, where poor quality sleep is known to make a person feel tired and without energy the next day.

Other studies shows that binge-watching was also shown to be significantly related with less healthy dietary practices, such as frequent fast-food intake, having family meals in front of the television, and felt stress [7].

People often gaze at near-field things on the screen, a wall, or a barrier directly behind the screen. When we look at a cellphone screen, we become closer—about 10 to 15 inches away. The muscles that force the eyes to converge and the lenses to focus have no time to relax, which can only be accomplished by looking out into the distance. At the same time, as we focus on new stimuli, our blinking rate decreases. As a result, many people suffer from eyestrain and dry eyes, as well as muscular discomfort from sitting for hours at a computer or cellphone screen [9].

According to the study's findings, eye exercises can minimize eye tiredness among computer users at the National Land Agency of Sorong Regency Office, and so can be utilized to avoid eye fatigue [15]. A study conducted on workers in the Padang Express editorial division showed that there was an effect of providing eye yoga exercise training on reducing eye fatigue in workers who used computers. The eye yoga exercise training is carried out in 12 movements with a duration of 15 seconds for each movement [16].

Various eye exercises can be done, one of which is the focus change exercise. This exercise is done by placing one finger in front of one eye, then focusing the gaze on the finger, then moving it away from the face. After that, shifting the gaze to another object, then refocusing on the finger, which is done three times until the eyes

feel comfortable. Another eye exercise movement is the number 8 movement, which is done by focusing the gaze 8 feet away on an object on the floor, then rotating the eyeballs, making a number 8 movement while looking at the floor, which is done for 30 seconds. Then, there is an eye exercise using the 20-20-20 rule. This eye exercise is done every 20 minutes by looking at an object that is 20 feet away for 20 seconds [17].

Eye exercises with the 20-20-20 rule are effective in overcoming eye spasms due to staring at a digital screen all day or commonly called Computer Vision Syndrome. Other benefits of eye exercises with the 20-20-20 rule are reducing eye strain, preventing dry eyes, increasing blood circulation to the eyes, preventing eye fatigue, and helping eye recovery [18].

Musculoskeletal neck pain is caused by various factors that has grown frequent in children and teenagers. There are several risk factors that might contribute to the development of this illness. Bending the head, neck, and shoulders on cell phones and portable gadgets, as well as distorting the neck posture when sitting, studying, or watching television, can cause the cervical spine to become stressed over time [8]. When a person sitting and staring at a a computer, tablet, laptop or mobile phone screen, lots of people slouch and bring their heads forward to view the screen. The slouched posture with a head forward position increases neck muscular tension, which causes muscle tension headaches, as well as declines in subjective energy and positive thoughts [9].

There are several types of neck disorders such as Cervical Spondylosis, Cervical Radiculopathy, and Text Neck Syndrome. Cervical spondylosis or neck joint damage occurs due to osteoarthritis. This condition can cause thinning of cartilage and calcification. Calcification of the neck bones can interfere with the movement of the neck joints and cause neck pain. Cervical Radiculopathy or commonly called a pinched nerve is caused by the protrusion of the pads between the vertebrae, causing neck pain [19]. Text neck syndrome is an injury caused by activities using gadgets such as watching or writing text messages, which are done by lowering the head for too long, thus triggering tension in the neck area, which ultimately causes pain in the neck [20].

To prevent text neck syndrome, there are several ways that can be done, such as positioning the device at a height that is parallel to the eyes so that you do not look down for too long and prevent tension in the spine. Take a moment to rest from using the device to straighten your head. Do neck stretching or relaxation to relieve tension in the neck. This can be done by lowering the head, lifting the head, tilting the head to the side and rotating the head and neck [20] .

There is research that shows that relaxation training can improve participants' knowledge and skills in performing relaxation. The results of research conducted by providing relaxation training to prevent work stress in nurses at KSGH Rasyida Medan showed that 95% of training participants increased their knowledge of work stress and work stress management and there was an increase in knowledge and skills in performing relaxation [21].

4.   Conclusion

Eye and neck relaxation training using the 20-20-20 rule, which was carried out on 27 participants who were FKM USU students, can increase participant's knowledge and skills about the eyes and neck relaxation using the 20-20-20 Rule. This is proven by the results of the post test scores of all participants who got a score of 60 and above and based on the simulation results where all participants got a score of 100. This increase knowledge and skills of participant's is certainly helpful for preventing the negative impacts of binge-watching activities, such as Computer Vision Syndrome and Text Neck Syndrome.

5.   Acknowledgements

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