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ANALYSIS OF THE DURATION OF ELECTRONIC MEDIA TO TENSION TYPE HEADACHE IN FACULTY OF MEDICINE UDAYANA UNIVERSITY CLASS OF 2018

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Abstract **Tension type headache is one of the most common types of primary headaches in the world. The purpose of this study was to determine whether there is a relationship between the duration of the use of electronic devices against TTH complaints in students. This research is a cross sectional analytic study conducted at the Faculty of Medicine, Udayana University. The data obtained are primary data using a questionnaire based on the classification of headaches according to ICHD-3 which has been modified and analyzed with the Pearson-chi square test. The total sample of 179 from the Medical Education study program. The results showed that 51.4% of respondents complained about TTH complaints and 48.6% complained of other headaches (NTTH). There is a relationship between the duration of the use of electronic devices in the form of mobile phones to the tension headache type (p <0.05).**

Keywords**: Electronic devices, Tension-type Headache, Medical Students.**

I. INTRODUCTION

In this modern era, technology is growing rapidly, and provides many benefits that useful, ranging from vehicles, communication tools, to household furniture. This benefits were also felt by students who use it to access some information.[1] Along with the development of technology, the usage of electronic devices increased rapidly. In 2016, the number of electronic device users in 2016 in Indonesia reached 28.3% of 73.7 million respondents. Besides that, cellphone ownership has reached 72.8% of 189.5 million respondents with 85.6% of them are smartphone users. Students and undergraduate students ranked third in the use of electronic devices.[2]

The rapid development and easy access of technology, especially electronic devices, certainly cannot be separated from the negative impacts it caused, especially in the health sector.[3,4] One of the increasing problems in students, is headache.[5] Users of electronic devices usually flexed the neck to staring at lower objects and keeping the head in the front position for a long period of time. This attitude causes the posture of the head to decrease in lordosis in the cervical from the lower cervical vertebrae and creates a posterior curve in the upper thoracic vertebrae to maintain balance, this is known as the forward head posture (FHP). In FHP, anatomical changes in the neck that cause changes in the gravity center as one of the factors that affect balance, and this condition also causes an imbalance of work on the neck muscles which is also one of the factors causing TTH.[6]

Globally, the adult population with active headache is 46% is general headache, 11% for migraine and 42% for Tension Type Headache (TTH) and 3% for chronic headache.[7] In the United States, 30% of the adult population suffers from occasional TTH, whereas chronic TTH affects about 3% of the population. Women are twice as likely to suffer than men.[8] TTH is a type of headache that also increases and is experienced by adolescents which can be attributed to the use of electronic devices in the form of computers.[9] In another study it was also found that the second most triggered TTH

in students was caused by using tools electronics devices (30%).[5] Therefore, the authors are interested in conducting research on the relationship between the use of electronic devices as a risk factor for TTH in 2018 students of the Faculty of Medicine, Udayana University.

II. INSTRUMENTS AND METHOD

The design of this study was a descriptive observational study with a cross sectional approach, where the variables were measured at one particular time in the study. The objectives to be achieved through this study are to determine the relationship between the duration of the use of electronic devices with a tension type headache for students of the Faculty of Medicine, Udayana University.

The reachable population of this research is all the third semester students of the medical science program who participated in the lecture process in December 2019 at the Faculty of Medicine, Udayana University, totaling 246 people. The sample of this study was selected using a total sampling method of reachable populations meeting the inclusion and exclusion criteria. The minimum number of samples in this study was calculated using the Slovin formula with an error tolerance limit of 5%. Based on the calculation of the number of samples, it was found that the minimum number of samples needed was 170 students.

This research was carried out through several stages using a questionnaire based on the classification of ICHD-3 Beta.[10] Researchers had previously obtained research advisory approval regarding the questionnaire material, as well as informed consent from respondents. The researcher will then give a questionnaire to the respondent and explain the filling out procedure and the purpose of the questionnaire.

Data obtained from the questionnaire were then analyzed by researchers using univariate analysis to find out the frequency distribution of independent variables and dependent variables, and bivariate analysis to determine whether there was a relationship between the independent variable and the dependent variable with a 5% significance test. If the P value ≤ 0.05 means that statistically there is a relationship between independent variables with the dependent variable. Meanwhile, if the P value> 0.05 means that there is no relationship between the independent variable and the dependent variable.

III. RESULTS

The number of reachable population in this study was 246 people. A total of 57 samples were dropped out due to filling out incomplete questionnaire information and 10 samples were dropped out because they did not meet the inclusion criteria of the study. The study was continued by using 179 respondents whose data could be used in research and had already fulfilled the study's inclusion and exclusion criteria. Distribution data of respondents involved in this study is shown in Table 1.

TABLE 1. Variable Distribution

	Numbers			
	TTH	NTTH	n(179)	%
Respodent Age				
18 Years Old	3	0	3	1,7
19 Years Old	76	68	144	80,4
20 Years Old	11	15	26	14,5
21 Years Old	2	4	6	3,4
Gender				
Male	35	26	61	34,1
Female	57	61	118	65,9
Cellphones Usage Duration				
±30 Minutes	5	0	5	2,8
1 Hour	0	4	4	2,2
2 Hours	9	14	23	12,8
≥ 3 Hours	78	69	147	82,1
Computer/Laptop Usage Duration				
±30 Minutes	5	8	13	7,3

1 Hour	12	12	24	13,4
2 Hours	44	35	79	44,1
≥ 3 Hours	31	32	63	35,2
Television Usage Duration				
±30 Minutes	68	57	125	69,8
1 Hour	13	14	27	15,1
2 Hours	9	14	23	12,8
≥ 3 Hours	2	2	4	2,2
Posture when Using Cellphone				
Sitting Straight	6	6	12	6,7
Sitting Back	31	26	57	31,8
Bent Sitting	11	12	23	12,8
Laying Down	44	43	87	48,6
Posture when Using Computer/Laptop				
Sitting Straight	29	22	51	28,5
Sitting Back	45	43	88	49,2
Bent Sitting	6	12	18	10,1
Laying Down	12	10	22	12,3
Posture when Using Television				
Sitting Straight	10	16	26	14,5
Sitting Back	28	34	62	34,6
Bent Sitting	0	1	1	0,6
Laying Down	54	36	90	50,3

From Table 1 above, it can be concluded that respondents from the 2018 batch of Medical Science Program tend to use electronic devices for more than 1 hour and other habits found in this study are the majority of respondents use electronic devices with sitting and leaning position.

The relationship of the duration of the use of electronic devices with TTH was tested using Pearson chi-square. Relationships are considered significant if p values <0.05 are obtained. The test results of each electronic device can be seen from Table 2.

TABLE 2. Pearson Chi-Square Test

			Headache Type				P Value
			TTH		NTTH		
			N	%	N	%	
Cellphone	Usage	30 Minutes	5	5,4	0	0	
Duration		1 Hours	0	0	4	4,6	0,015
		2 Hours	9	9,8	14	16,1	
		3 Hours	78	84,8	69	79,3	
Television	Usage	30 Minutes	68	73,9	57	65,5	
Duration		1 Hours	13	14,1	14	16,1	0,582
		2 Hours	9	9,8	14	16,1	
		3 Hours	2	2,2	2	2,3	
Laptop/Computer		30 Minutes	5	5,4	8	9,2	
Usage Duration		1 Hours	12	13,0	12	13,8	0,661
		2 Hours	44	47,8	35	40,2	
		3 Hours	31	33,7	32	36,8	

*Significant p<0,05

Table 2 presents an overview of the analysis of each duration of use of electronic devices with blood vessel scores using the Pearson-chi square test. Characteristics of respondents are shown in the form of age, gender, duration of use of computers / laptops, duration of use of mobile phones, duration of use of television, position of use of mobile phones, position of use of computers / laptops, position of use of television. In this study the respondent's age variable was

obtained with an average age of 19 years. It was also found that gender variables were seen that complained of TTH, namely in men and women there were 92 (51.4%) respondents and those who complained of other types of headaches (NTTH) in men and women were 87 (48.6%). These results indicate that there is more TTH than NTTH. In this study also found 147 (82.1%) of respondents used mobile for 3 hours or more, and 78 of them complained about TTH, meanwhile 69 others complained of NTTH. This result shows that TTH complaints occurred in more than half of the 2018 batch Medical Science Students that using mobile phones. The majority of respondents also use computers / laptops for more than 1 hour, with 87 people complaining about TTH. The majority of students no longer or rarely use electronic devices in the form of television and as many as 125 respondents (69.8%) only use television for approximately 30 minutes every day.

IV. DISCUSSION

It was found that only one had a significant relationship with increased usage time, namely the duration of mobile or cell phone use. The relationship between the duration of cellphone use with TTH has a significant relationship ($p = 0.015$). This contrasts with research conducted by Smith et al and Milde Busch et al. who get insignificant relationship between the use of mobile phone / handphone. In both studies also obtained insignificant results on other types of electronic devices, namely computers / laptops and also television and after adjusting the parameters with this study found insignificant results as well. The relationship of the duration of computer use is in line with the results of other studies conducted in Brazil, not found a significant relationship of the duration of the use of other electronic devices in the form of a computer / laptop with a long complaint of TTH.[11]

In this study, it is seen that the respondents are more likely to use mobile phones with a longer duration than other electronic devices and also the majority of respondents use television under 30 minutes. Differences in habits from the use of this media can be reflected with respondents who have higher levels of education tend to use smartphones and computers as everyday electronic media[2]. The distribution of samples that complained about TTH and NTTH did not have a significant difference. This is likely due to migraine headaches that are not separated from other headaches and are categorized as NTTH. In other studies, they found an association of excessive use of mobile phones and computers would cause TTH and Migraine with a number of complaints that were not much different from larger sample sizes[12,13,14].

In this study, it was also found that the majority of samples that used electronic devices such as smartphones, computers / laptops and televisions for more than 1 hour tended to use them in a sitting, leaning or lying position and made the condition of posture and neck posture that was not ergonomic. This is also one of the risk factors of TTH itself, the condition of the neck and poor posture for a long time causes the neck muscles as a whole to contract without pauses so as to produce excessive lactic acid and cause peripheral blunt pain, this pain spreads across the sides head or in the retro-orbital region which eventually becomes tension headaches or can be called TTH. Another factor is that looking at the screen of an electronic device for a long time also causes the head muscles and neck muscles to contract continuously and cause myofascial pain and eventually become TTH. In the results of the relationship between the duration of television use to TTH, it was found to be insignificant or unrelated due to the duration of the majority of television use under 1 hour and also more likely to use it in an upright sitting position. But the insignificant results obtained on the relationship between computers / laptops might be due to the perception of the sample of pain stimulation that is different from the explanation according to ICHD-3 Beta[10].

V. CONCLUSIONS

After conducting research on the relationship of the duration of the use of electronic devices as a risk factor for Tension Type Headache in the students of the Faculty of Medicine, Udayana University, 2018 Denpasar, the following conclusions can be obtained. Relationship between TTH and duration of TV usage are not significant ($p = 0.661$). Relationship between TTH and duration of cell phone usage are significant ($p = 0.015$). Relationship between TTH and duration of computer usage are not significant ($p = 0.582$). It was concluded that TTH had a significant relationship with the duration of the use of electronic devices in the form of mobile phones.

VI. COMMENTS

Based on the above conclusions the suggestions that can be submitted include the following: The need for education to every student about the importance of primary prevention and secondary prevention of risk factors from TTH, one of which is an electronic device; Further research needs to be done with research designs and designs such as cohorts, because this study uses a questionnaire rather than using direct observation and exposure as a source of data so there are

still many possibilities of bias in data collection and also can only provide limited evidence. Confounding variables in the form of stress can also affect the results of the study. It also can not eliminate the possibility that respondents reduce the duration of use of electronic devices when collecting data due to the TTH itself.

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