

The Effects of Monday Thursday Fasting on Blood Pressure and Oral Hygiene Level on Clinical Dental Profession Student

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ABSTRACT

Fasting has many health benefits for the human body as there is a detoxification process or release of toxic substances in the body. One of the benefits are on blood pressure and oral hygiene. This research aims to identify the difference of blood pressure and oral hygiene level between clinical dental profession students who have a habitual and those who have no habitual doing Monday Thursday fasting. The Mann-Whitney U-Test result for blood pressure category showed a p value 0,006 ($p < 0,05$). There was a difference in the blood pressure among two groups. The oral hygiene level category showed that p value 1,000 ($p > 0,05$) and , there was no significant difference in the oral hygiene level. Based on this study's result, it can be concluded that the clinical dental profession students with a habit of doing Monday Thursday fasting had normal blood pressure compared to those with no habitual. However at the oral hygiene level, all students had good oral hygiene due to sufficient oral health knowledge.

Keywords: *blood pressure, Monday Thursday Fasting, oral hygiene level*

1. INTRODUCTION

Fasting is good to avoid something exaggerating and excessive. Someone who let their stomach full in habitual could harm their heart as a blood pump. Fasting is an alternative way to avoid the excessive eating habit of a human [1]. There are so many health benefits of fasting due to detoxification of toxic substances removal from our bodies. The decrease of cortisol hormone produced by the adrenal glands during fasting could lower stress levels. Fasting can also change lifestyle and bad eating habits such as smoking and craving for sweets. In terms of the benefits, Monday Thursday fasting has become the essential sunnah fasting among others considering its significant benefit [2, 3].

Fasting is important to keep blood pressure normal. Excessive eating habits especially fatty food could increase cholesterol and fat rate on blood which will impact blood pressure. This is due to the layer formed from fat and cholesterol on blood vessels blocking the rate of blood flow [4].

Fasting people do not eat and drink for nearly twelve hours, thus the intake amount will not be as much as usual. It will affect the number of bacteria in their mouth since more food comes into their mouth, indicating more varieties will be found in their mouth. Otherwise, the human lifestyle tends to be more in order and more likely to do other sunnah worship by fasting. Human tends to have better selfcontrol when they do fasting since fasting will protect human from their lust and something inappropriate [5].

When human beings can control their lust, there will be peace upon them. It will decrease their emotional stress level. According Afifi's research about the effect of Ramadhan Fasting on a daily lifestyle, there is also a decrease in emotional stress levels during fasting [6]. The decrease in emotional stress will bring peace to an individual. Peacefulness will stimulate the parasympathetic nerve. Sympathetic nerve stimulations will make cardiac muscle contraction works faster while parasympathetic nerve stimulation will get slower. Otherwise, the lower rate of emotional stress will affect the secretion system and saliva pH in the mouth, which will be very useful for the self-cleansing process inside the mouth [7].

Blood pressure has been an indicator to measure the cardiovascular system. It is pressure by blood against blood vessels affected by blood volume and blood vessel elasticity. Higher blood pressure is caused by increased blood volume or blood vessel elasticity and vice versa, the lower blood volume will decrease blood pressure [8]. [9]. According to World Health Organization (WHO), normal blood pressure for adults is around 120/80 mmHg up to 130/85 mmHg. When there is an increase in blood pressure above normal, it is called hypertension. There are some factors that could increase the risk or tendency of people with hypertension according to individual characteristics, such as age, sex, tribe, genetic factor, external factors, obesity, stress, smoking, alcohol, salt consumption, and any others [10].

The health of the body and soul has been the most important thing in human life, not only in general but specifically on oral hygiene and health since it can affect the whole body's speech

function, digestion, and self-esteem. Fasting Muslims have two mealtimes, namely iftar time on *maghrib* and *sahur* before dawn. The length of fasting time is different according to the world time zone, around 11 – 18 hours every day on average [11]. During the fasting hour, humans are not allowed to eat or drink anything. It can affect mouth condition for changing of pH and saliva secretion as a self-cleansing agent on the mouth. The decrease of liquid intake during fasting could also lower the volume of liquid inside the body, affecting the blood circulation process. The decreased volume of the liquid inside the body will affect blood circulation in the blood vessel and could lower blood pressure [12].

There is no scientific research about the effect of Monday-Thursday fasting on blood pressure and oral hygiene. Therefore, this research has been conducted to identify the differences between blood pressure and oral hygiene of Clinical Dental profession student UMY with Monday Thursday fasting habit.

2. MATERIAL AND METHOD

Samples in this research were Clinical Dental profession student UMY, second semester in Rumah Sakit Gigi dan Mulut UMY with inclusion criteria, such as:

1. Healthy student at the moment they are Monday-Thursday fasting.
2. Students that are willing to participate in.

Meanwhile, the research exclusion criteria:

- Students performing brushing teeth less than twice a day
1. Students with fixed orthodontic appliances
 2. Students with a smoking habit

The sample used for this research, including drop out, were 54 volunteers and they had filled in informed consent. The measurement of blood pressure and oral hygiene level has been conducted to volunteer. Blood pressure measurements were done three times using a digital thermometer (Omron, USA) with 15 of time interval. Oral hygiene level measurement had been done for one time using the Oral Hygiene Index Simplified (OHI-S). Data collection and measurement used in this study were SPSS.

3. RESULT AND DISCUSSION

The description of students as a volunteer in this study was presented in Table 1. Students' blood pressure measurement and oral hygiene level with Monday-Thursday fasting habit and those who do not have Monday-Thursday fasting are shown in Table 2 and 3.

Table 1. Description based on age

	Frequency	Percentage	Valid Percentage	Cumulative Percent
Valid	22	2	4,1	4,1
	23	28	57,1	61,2
	24	13	26,5	87,8
	25	2	4,1	91,8
	26	2	4,1	95,9
	27	2	4,1	100,0
Total	49	100,0	100,0	

Table 2. Blood pressure category

		Blood Pressure		Total
		upnormal	normal	upnormal
Monday-Thursday fasting habit	no habit	20	13	33
	Habit	3	13	16
Total		23	26	49

Table 3. Oral Hygiene Index category

		OHI S	Total
		good	good
Monday-Thursday fasting habit	habit	33	33
	no habit	16	16
Total		49	49

Table 4. Statistic analysis

	Blood Pressure	OHI S
Mann-Whitney U	153,500	264,000
Wilcoxon W	714,500	400,000
Z	-2,725	,000
Asymp. Sig. (2-tailed)	,006	1,000

Most students with habitual Monday-Thursday fasting has a normal blood pressure rate. The habit of having Monday-Thursday fasting has protected them from their lust and any other despicable behavior (Table 4). Students with habitual Monday-Thursday fasting indicates that they have done it in a certain period. This habitual routine could affect human health, one of which is on blood pressure rate and to avoid hypertension. Intermittent fasting could raise Brain Derivat Nutrophic Factor (BDNF) that lower systolic and diastolic blood pressure by activity parasympathetic system. Brain Derivat Nutrophic Factor can cause acetylcholine release by the vagus nerve that lower heart contraction frequency [13].

For those who do not Monday-Thursday fasting, the result of their blood pressure measurement tends to be beyond normal. Toledo explained in their research about safety, health improvement, and well-being to 1422 subject that have been fasting for 4 to 21 days. The research showed more significant decrease in systolic and diastolic blood pressure in a more extended period of fasting group category, without any distinction on the sex category. Blood pressure showed a significant decrease but it was still higher than the lowest normal range. These decrease might have been triggered by several factors such as increased parasympathetic activity due to neurotrophic factor release from the brain (BDNF) the increase in Na kidney excretion and the increase of natriuretic pep receptor sensitivity [14].

The oral hygiene category showed different results. Around 49 samples consisting of 33 humans without habitual Monday-Thursday fasting and 16 humans with habitual Monday Thursday fasting all have good oral hygiene (Table 3). Based on this 100% good result, we can conclude that there were no differences in oral hygiene levels between students with habitual Monday-Thursday, fasting routine and those who do not (Table 4) due to some factors.

Considering that the samples in this research are professional students of Clinical Dental with good oral health knowledge. The higher education level of someone will increase their knowledge [15]. Descriptive analytic research by Komeilian and Moghaddas to 880 subjects who had fasting in Teheran concluded that gender and education (women and high education level) contributed to oral hygiene with consideration on orderly teeth brushing at minimum twice a day [16].

Furthermore, scaling is an oral treatment to remove plaque, calculus, and stain from all over the teeth surface and roots [17]. Other than that, some of the respondents are removable orthodontic appliances users that had regularly scaling treatment. Another research concluded by Sariri about alternative glucose saliva during Ramadhan fasting [18] explained that even though Ramadhan fasting affected saliva

glucose, it would not affect glucose function in healthy human's saliva, since the concentration of glucose saliva depended on their intake during fasting. Normal saliva function was considered important for healthy oral mucose maintenance. It has been one among many factors that affect students' oral hygiene who routinely do Monday-Thursday fasting.

4. CONCLUSION

The clinical dental profession students with a habit of doing Monday-Thursday fasting have normal blood pressure compared to those with no habit. However, in the oral hygiene level, all students have good oral hygiene due to sufficient oral health knowledge.

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