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Original Article

Effect of Intermittent Fasting on Ureum in Hypertension Patients

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ABSTRACT

Background: Hypertension is a silent killer that causes 10.44 million people to die every year. The prevalence of hypertension based on the 2018 Riskesdas results has also increased, as well as in Jambi Province. In pre-clinical and clinical studies, intermittent fasting and physical activity are non-pharmacological therapies for hypertension and reducing risk factors for cardiovascular disease. This study aims to determine the effect of intermittent fasting and moderate physical activity on systolic blood pressure and creatinine in hypertension sufferers in Jambi City.

Method: This research is a quasi-experimental research with a cross-sectional research design. The research was conducted on 45 patients suffering from hypertension who received treatment at the Community Health Center in Jambi City, and did not suffer from heart disease, kidney failure, history of stroke or diabetes mellitus. The research sample had urea and creatinine checked before and after the study, carried out intermittent fasting twice a week for 1 month, and had their blood pressure measured once every three days. Respondents received guidance regarding moderate physical activity by providing exercise guidance and sports videos of moderate physical activity.

Result: The results of the study showed that intermittent fasting and moderate physical activity in hypertensive patients can reduce systolic pressure, systolic blood pressure after intermittent fasting (mean=135.2+19, 9) compared to before (mean=144.1+21.1) (t-test; p=0.001) as well as reducing urea levels, after the intermittent fasting diet, the average creatinine level was 23.6 (11.9 - 65.7) compared to previously 20.4 (11 - 74) (t-test; p=0.001).

Conclusion: The conclusion of this study is that intermittent fasting and moderate physical activity can reduce systolic blood pressure and urea in hypertensive sufferers.

INTRODUCTION

According to the World Health Organization data, around 1.13 billion residents worldwide suffer from Hypertension, And the majority experience it in moderate countries. Prevalence hypertension based on results Riskesdas 2018 too experienced enhancement from results Riskesdas 2013, where sufferer hypertension increased from 25.8% to 34.1%. Hypertension is a disease of 10 diseases, most of them are in community health centers in Jambi Province; in 2016, the total sufferers medicated Hypertension to health centers in Jambi Province was around 13.69%, and in 2020, the total sufferers of Hypertension already reached 23.63%. [1]

Intermittent fasting and activity physique is possible non-pharmacological therapy helps Good in a way studies pre-clinical and clinical Hypertension and factor risk disease cardiovascular.[2] Intermittent fasting, i.e., diet modification with fasting is possible to increase sensitivity from insulin, reduces oxidative stress, cholesterol blood, as well can reduce inflammatory factors.[3] Intermittent Fasting performed in the study: intermittent fasting type 5:2. This type of 5:2 Intermittent Fasting can lower visceral fat and increase adiponectin. Increased visceral fat Also influences the improvement of blood pressure. This 5:2 type of intermittent fasting is a fasting diet done twice a week, Whereas on-moment fasting only gets the intake of as much as 500 calories. The 5:2 type intermittent fasting method can lower visceral fat and increase adiponectin, namely intermittent fasting type 5:2, where done fast 2 times a week. During fasting, only consume food as much as 500 calories.[4] Research about the impact of intermittent fasting on humans was done by Rynders in 2019, which obtained results that heavy body as much as 3.8%.[5]

Moderate Physical Activity, i.e., the moment you do an activity physique, the body will experience a little sweating, enhanced pulse heart, and frequency more breath, but still can talk. The energy released during the activity physique is currently 3.5 up to 7 Kcal/ minute.[6] Based on the research, it is known that activity physique light is a factor risk of hypertension. Activity physique is easy to do somebody cause frequency heart taller because muscle heart work harder moment contraction heart.[7] Research this objective is to know the current effect of intermittent fasting and activity physique on pressure systolic and creatinine levels in patients with hypertension.

METHODS

Study this is a quasi-experimental with design study, i.e., Cross-Sectional as place study, i.e., carried out at the Jambi City Health Center as place inspection pressure blood and do guidance activity physique currently and Laboratory Emerald Jambi for inspection rate creatinine. Study done from March 2023 to month July 2023. Inclusion criteria for patients, namely sufferers of HypertensionHypertension who are treated at the Jambi City Health Center and are willing to follow the instructions on research and exclusion criteria, namely not participating in activities until the completion of the research and having a history of other previous illnesses, i.e., suffer disease heart; experience fails kidneys, history of stroke and experience diabetes mellitus. Participants study intermittent fasting twice a week, i.e., Monday and Thursday, as well as moment fast consume as much as 500 calories, blood pressure checks every 3 days, creatinine assessment before and after the study, and members of an exercise video. Activity physique currently and guidance in doing sport.

RESULTS

This research was conducted on 45 hypertensive patients willing to follow an intermittent fasting diet and moderate physical activity. The patient sample consisted of 40 female and 5 male hypertensive patients.

Systolic Blood Pressure

Blood pressure checks are carried out on hypertensive patients every three days. The average value of systolic blood pressure for hypertensive patients who follow an intermittent fasting diet and moderate physical activity is as follows (Table 1).

Table 1. Systolic Blood Pressure

		Mean (mmHg)	Difference	CI 95%	*p*-value* *
Systolic	Pre	144.1 ± 21.1	-9.2 ± 17.3	4.04 - 14.41	0.001
	Post	135.2 ± 19.9			

** T Test*

In hypertensive patients who follow an intermittent fasting diet and moderate physical activity for 1 month, it is known that there is a decrease in the average systolic blood pressure in these hypertensive patients. Based on the T-test, it is known that there is a significant relationship between systolic blood pressure before and after intermittent fasting diet treatment and moderate physical activity. Intermittent fasting is known to reduce the risk of cardiovascular disease. High blood pressure is a marker of cardiovascular disease.[8,9] In the same research, it is known that alternative day fasting carried out for 8 to 12 weeks can reduce systolic blood pressure.[10,11] Another study conducted on a 6-month intermittent fasting diet type 5:2 can also reduce systolic and diastolic blood pressure.[12,13].

Ureum Levels

In hypertensive patients who follow an intermittent fasting diet and moderate physical activity, creatinine is checked before and after treatment. Ureum assessment is carried out to determine kidney function in hypertensive patients. The ureum results for hypertensive patients who follow an intermittent fasting diet and moderate physical activity are as follows Table 2.

Table 2. Creatinine levels of hypertensive patients before and after intermittent fasting diet

		Average	Min-Max	p-value*
Ureum	Pre	23.6	11.9 - 65.7	<0.001
	Post	20.4	11 - 74	

**Wilcoxon Test*

In this study, it was found that there was a decrease in the average creatinine value before and after doing an intermittent fasting diet and moderate physical activity in hypertensive patients[14]. Based on the Wil Coxon rank test, it is also known that there is a significant difference in the average before and after the intermittent fasting diet and moderate physical activity in hypertensive patients. Creatinine examination is one of the parameters of kidney function because the concentration of creatinine in plasma and its excretion in urine is relatively constant for 24 hours.[15,16] Kidney damage is one of the complications that occurs in hypertensive patients, which is why creatinine measurements were carried out in this research sample. The same results are known from research on Ramadan fasting by patients with stage II-IV chronic kidney failure who experienced moderate improvements in creatinine values.[17,18] Another study by Abdullah, 2023, revealed increased creatinine in patients with chronic kidney failure who fasted during Ramadan. Increased creatinine may occur due to the patient's lack of compliance in taking medication and lack of fluids during fasting during the day.[19-20]

CONCLUSION

This research concludes that Intermittent Fasting and Moderate Physical Activity in Hypertension Sufferers can reduce systolic blood pressure and blood ureum levels.

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