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THE EFFECT OF CUPPING THERAPY TO REDUCE BLOOD PRESSURE OF HYPERTENSIVE PATIENTS IN HOLISTIC HEALTH HOUSE FIYAS CENDANA VILLAGE

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ABSTRAK

Intriduction: *Hypertension is defined as an increase in systolic blood pressure of more than 140 mmHg and diastolic blood pressure of more than 90 mmHg measured twice with a five-minute interval in a state of sufficient rest or relaxation. Hypertension is a widely known cardiovascular disease in which a patient's blood pressure rises above normal levels. Hypertension is often referred to as a silent killer. Uncontrolled and persistent hypertension is a leading cause of death, resulting in myocardial infarction, heart failure, kidney failure, stroke, vision problems, and peripheral artery. Hypertension can be prevented with both pharmacological and non-pharmacological treatments. One of the non-pharmacological therapies that can be applied is alternative medicine in the form of cupping therapy.*
Objectives: *The purpose of this study is to examine the effect of cupping therapy on blood pressure reduction in hypertensive patients*
Method: *The design used in this study is a Quasi-Experimental design involving a control group and an intervention group. The population in this study consists of hypertension patients at Rumah Sehat Holistik (RSH) Fiyas, with a total of 50 patients. The sample size includes 17 individuals in the intervention group and 17 individuals in the control group, with sampling carried out using purposive sampling technique. The research instrument used the standard operating procedure for cupping therapy and a sphygmomanometer to measure the patients' blood pressure before and after cupping. Data analysis was performed using the Paired Sample t-test to measure blood pressure in both the control and intervention groups, and the Independent T-test to assess the effect of cupping therapy on the reduction of blood pressure in hypertension patients.*
Results: *The results of the statistical test showed P-value of 0.000, which means $\alpha < 0.05$. The average systolic blood pressure at the final measurement for the intervention group is 140.76, while the average systolic blood pressure for the control group is 150.29, and the average diastolic blood pressure at the final measurement for the intervention group is 84.24, while the average diastolic blood pressure for the control group is 94.71 with a total of 34 participants.*
Conclusions: *based on results can be concluded that there is an effect of cupping therapy on blood pressure reduction in hypertensive patients. This study is expected to provide a foundation for the implementation of alternative therapies in lowering and controlling blood pressure in hypertension patients.*

Introduction

Hypertension is defined as an increase in systolic blood pressure of more than 140 mmHg and diastolic blood pressure of more than 90 mmHg measured twice with a five-minute interval in a state of sufficient rest or relaxation (Ministry of Health of the Republic of Indonesia, 2018). Systolic blood pressure > 130 mmHg and diastolic blood pressure > 80 mmHg in adults (Asmah,

2023). Hypertension is a widely recognized cardiovascular disease where a patient's blood pressure rises above normal. Persistent and uncontrolled hypertension is a leading cause of death, resulting in myocardial infarction, heart failure, kidney failure, stroke, vision disorders, and peripheral vascular disease (Andrian, Siregar, & Tanjung, 2023)

The World Health Organization (WHO) in 2015 reports that approximately 1.13 billion people worldwide suffer from hypertension, making it a leading cause of cardiovascular disease. According to the American Heart Association (AHA), the number of Americans suffering from hypertension has reached 74.5 million. The National Health Indicator Survey (Sirkesnas) in 2020 indicates an increase in the prevalence of hypertension among the population aged 18 and over, amounting to 32.4% (Sirkesnas, 2020). In Indonesia, there are 175,000 deaths annually due to hypertension, and there are 450,000 cases of hypertension. Among these cases, it is noted that 337,500 cases (75%) involve individuals of productive age (above 25 years), predominantly males, while 112,500 cases (25%) are undiagnosed, with only a portion included in the hypertension disease management program as recommended by the WHO (Ministry of Health of the Republic of Indonesia, 2021). Based on data from the Banggai District Health Office, the prevalence of non-communicable diseases such as hypertension reaches 70,435 individuals. Specifically, in the Work Area of the Kampung Baru Community Health Center in Luwuk, there are 7,376 hypertension patients, of which only 2,806 receive treatment (Health Profile of Banggai District, 2022).

The high number of hypertension sufferers is closely related to the lifestyle of the community, which tends to involve a lack of physical activity, excessive consumption of high-salt foods, excessive caffeine intake, and habits such as smoking and drinking alcohol, as well as overweight or obesity, dyslipidemia, and stress (Health Profile of Central Sulawesi Province, 2021). Hypertension can be prevented with both pharmacological and non-pharmacological treatments. According to Putri (2018), pharmacological treatment involves the use of antihypertensive medications such as diuretics, adrenergic blockers, and calcium channel blockers, while according to Adi Trisnawan (2019), non-pharmacological treatment can be carried out by modifying lifestyle, such as following a recommended diet, reducing salt intake, engaging in regular exercise, not smoking, avoiding alcohol, managing eating habits, or undergoing alternative therapies (Annisa, Rudiyanto, & Sholihin, 2021).

Non-pharmacological treatment, in this case alternative medicine, is preferred by some segments of society, considering the public's perception of the side effects of using chemical substances and their economic conditions. Generally, alternative treatments involve herbal medicine and traditional methods based on ancestral beliefs and religion. Therefore, cupping therapy is highly recommended due to its benefits and affordable cost (Mukhlis, Hardono, Hermawan, Purwono, & Wahyudi, 2020). The Indonesian community itself believes that cupping therapy can help lower blood pressure in hypertension patients. This is supported by research conducted by Sardaniah, Nurhasanah, & Marlena (2020), which found a change in blood pressure after one cupping intervention, with a mean difference of 12.143 for systolic and 8.265 for diastolic pressure. Cupping therapy is already well-known in Indonesia, as evidenced by the increasing number of health clinics or centers offering cupping services (Pranata, 2018). One such clinic is Rumah Sehat Holistik (RSH) Fiyas, the only clinic in Central Sulawesi that provides

cupping therapy services.

Based on a preliminary study at the Holistic Health House (RSH) Fiyas, data from January to December 2022 showed a total of 867 patients, with 338 hypertensive patients undergoing cupping therapy. In 2023, from January to July, there were 607 patients, with 285 hypertensive patients receiving cupping therapy. This indicates an increase in the number of patients undergoing cupping therapy, particularly among hypertensive patients. Traditional healers claim that cupping can help reduce blood pressure. An initial observation has also been conducted on 5 patients, and the results showed a decrease in blood pressure after cupping therapy. However, further research is still needed to prove the effect of cupping therapy on hypertension patients.

Based on the above description, the researchers are interested in conducting a study titled "The Effect of Cupping Therapy to Reduce Blood Pressure of Hypertensive Patients in Holistic Health House Fiyas Cendana Village"

Methods

The design has been used in this study is a Quasi-Experimental design involving both a control group and an intervention group. The population in this study consists of hypertension patients at Rumah Sehat Holistik (RSH) Fiyas, with a total of 50 patients. The sample in this study is divided into two groups: the intervention group and the control group. Both groups underwent measurements (observations) before and after the treatment. The intervention group received cupping therapy, while the control group received no treatment. The sample in this study consisted of 34 respondents, with 17 participants in the intervention group and 17 participants in the control group. Sampling was conducted using purposive sampling technique with inclusion criteria such as patients with a history of hypertension, aged 20-60 years, patients with grade 1 high blood pressure, and those willing to participate as respondents. Exclusion criteria included patients with a history of kidney disease or diabetes mellitus, and patients who donated blood within one month before undergoing cupping therapy.

In this study, primary data were collected through interviews and direct observations with the patients, while secondary data were obtained from Rumah Sehat Holistik (RSH) Fiyas in the form of medical records and other supporting documents. The research instrument used the standard operating procedure for cupping therapy and a sphygmomanometer to measure the patients' blood pressure before and after cupping. The cupping therapy procedure requires several tools, including cupping cups, a lancing device/lancet, and olive oil. Data analysis was performed using the Paired Sample t-test to measure blood pressure in both the control and intervention groups, and the Independent t-test to determine the effect of cupping therapy on the reduction of blood pressure in hypertension patients.

Results

1. Respondent Characteristics

1) Age

Respondent Characteristics Based on Age in the Intervention and Control Groups at the Holistic Health House (RSH) Fiyas, Cendana Village, Banggai Regency

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Table 4.1 Frequency Distribution by Age in the Intervention and Control Groups at the Holistic Health House (RSH) Fiyas, Cendana Village, Banggai Regency

No	Age	Intervention		Control	
		N	%	N	%
1	30 - 39	3	17.6	2	11.8
2	40 - 49	5	29.4	6	35.3
3	50 - 59	6	35.3	4	23.5
4	60 - 69	3	17.6	5	29.4
TOTAL		17	100.0	17	100.0

Based on Table 4.1, the distribution of patients in the intervention group based on age shows that the majority of hypertensive patients are in the 50–59 year age range. In contrast, the control group has the highest number of patients in the 40–49 year age range

2) Gender

Patient Characteristics Based on Gender in the Intervention and Control Groups at the Holistic Health House (RSH) Fiyas, Cendana Village, Banggai Regency.

All respondents were randomly assigned to either the control group or the intervention group. Compliance monitoring was also conducted, where strict monitoring of medication adherence was carried out through self-reporting by the participants. This allowed the researchers to assess whether non-compliance affected the study results. Data on patients' regular medication use were collected during the pre-test phase. During the study, the researchers ensured that respondents did not take any medication during the study.

Table 4.2 Frequency Distribution by Gender in the Intervention and Control Groups at the Holistic Health House (RSH) Fiyas, Cendana Village, Banggai Regency

No	Gender	Intervention		Control	
		N	%	N	%
1	Male	9	52.9	9	52.9
2	Female	8	47.1	8	47.1
TOTAL		17	100.0	17	100.0

Based on Table 4.2, the gender distribution in the intervention and control groups shows that the majority are male, with a total of 9 individuals, representing 52.9%

3) Regularly Taking Medication

Patient Characteristics Based on Regular Medication Consumption in the Intervention and Control Groups at the Holistic Health House (RSH) Fiyas, Cendana Village, Banggai Regency.

The data on patients' smoking habits were collected during the pre-test phase. During the study, the researchers ensured that respondents did not smoke throughout the study period

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Table 4.3 Frequency Distribution by Regular Medication Consumption in the Intervention and Control Groups at the Holistic Health House (RSH) Fiyas, Cendana Village, Banggai Regency

No	Regularly Taking Medication	Intervention		Control	
		N	%	N	%
1	Every Day	6	35.3	4	23.5
2	Not Every Day	7	41.2	11	64.7
3	Never	4	23.5	2	11.8
TOTAL		17	100.0	17	100.0

Based on Table 4.3, in the intervention group, a significant number of patients do not take medication every day, with a total of 7 individuals, representing 41.2%. In the control group, a similar trend is observed, with 11 individuals, or 64.7%, not taking medication every day

4) Smoking

Patient Characteristics Based on Smoking Habits in the Intervention and Control Groups at the Holistic Health House (RSH) Fiyas, Cendana Village, Banggai Regency.

Table 4.4 Frequency Distribution by Smoking Habits in the Intervention and Control Groups at the Holistic Health House (RSH) Fiyas, Cendana Village, Banggai Regency

No	Smoking	Intervention		Control	
		N	%	N	%
1	Yes	7	52.9	7	41.2
2	No	10	47.1	10	58.8
TOTAL		17	100.0	17	100.0

Based on Table 4.4, it is found that patients in both the intervention and control groups do not have a smoking habit, with a percentage of 47.1% or 7 individuals.

2. Univariate Analysis

1) Blood Pressure Analysis Before Cupping Therapy in the Intervention and Control Groups

Table 4.5 Distribution of Mean Blood Pressure Values Before Cupping Therapy in the Intervention and Control Groups

Systolic and Diastolic Pressure	Intervention		Control	
	Mean	N	Mean	N
Systolic BP Before	155,29	17	150,00	17
Diastolic BP Before	89,76	17	95,29	17

Based on the results of analysis 4.5, it is noted that the mean systolic blood pressure before cupping therapy in the intervention and control groups is 155.29 and 150.00

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2) Blood Pressure Analysis After Cupping Therapy in the Intervention and Control Groups

Table 4.6 Distribution of Mean Blood Pressure Values After Cupping Therapy in the Intervention and Control Groups

Systolic and Diastolic Pressure	Intervention		Control	
	Mean	N	Mean	N
Systolic BP After	146,94	17	150,29	17
Diastolic BP After	84,24	17	94,71	17

Based on Table 4.6, it is noted that the mean systolic blood pressure after cupping therapy in the intervention and control groups is 140.76 and 150.29

3. Bivariate Analysis

1) Difference in Blood Pressure in the Control Group Before and After Intervention

Table 4.7 Difference in Systolic and Diastolic Blood Pressure Before and After Initial and Final Measurements in Hypertensive Patients in Cendana Village, Banggai Regency

BP Systole & Diastole	Mean	N	Std. Devation	P-value
BP Systol				
Before	150,00	17	9.014	0.579
After	150,29	17	9.095	
BP Diastole				
Before	95,29	17	6.243	0.332
Aftre	94,71	17	5.145	

Based on Table 4.8, it is noted that the systolic blood pressure in the first and second measurements in the control group without intervention yielded a P-value of 0.579, which is greater than 0.05. Meanwhile, the diastolic blood pressure showed a P-value of 0.332, also greater than 0.05. This indicates that the P-values are higher than 0.05, meaning there is no significant difference between the first and second blood pressure measurements conducted in the control group without intervention

2) Difference in Blood Pressure in the Intervention Group Before and After Cupping Therapy

Table 4.8 The Effect of Cupping Therapy on Blood Pressure Reduction in Hypertensive Patients at the Holistic Health House (RSH) Fiyas, Cendana Village, Banggai Regency

BP Systole & Diastole	Mean	N	Std. Devation	P-value
BP Systole				

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Before	155,29	17	6.488	0.000
After	146,94	17	8.197	
BP Diastole				
Sebelum	89,76	17	7.645	0.003
After				

Based on Table 4.7, it is noted that the systolic blood pressure before and after cupping therapy in the intervention group, using the Paired Sample T-test, yielded a P-value of 0.000, which is less than α 0.05. Similarly, the diastolic blood pressure before and after cupping therapy in the intervention group showed a P-value of 0.003, also less than 0.05. It can be concluded that there is an effect of cupping therapy on blood pressure reduction in hypertensive patients.

3) Results of the Analysis of the Difference in the Effect of Cupping Therapy Between the Control and Intervention Groups on Blood Pressure Reduction in Final Measurements of Hypertensive Patients

Table 4.9 Results of the Analysis of the Difference in Mean Systolic and Diastolic Blood Pressure in Final Measurements Between the Intervention and Control Groups

BP Systole & Diastole	Mean	N	Std. Deviation	P-Value
Final Systolic BP Intervention	146,94	34	8.197	0,000
Final Systolic BP Control	150,29		9.095	
Final Diastolic BP Intervention	84,24	34	4.671	0,000
Final Diastolic BP Control	94,71		5.145	

Based on Table 4.10, it is noted that the mean systolic blood pressure in the final measurements is 140.76 for the intervention group and 150.29 for the control group, with a total of 34 patients. The statistical test using the Paired Sample T-test yielded a P-value of 0.002. Meanwhile, the mean diastolic blood pressure in the final measurements is 84.24 for the intervention group and 94.71 for the control group, also with a total of 34 patients. The statistical test using the Paired Sample T-test yielded a P-value of 0.000.

Discussions

1. Blood Pressure Analysis of Control Group

Based on the research results, it can be noted that the p-value for systolic blood pressure is 0.579 and for diastolic blood pressure is 0.332 in the control group. Therefore, it can be concluded that there is no significant difference between the initial and final measurements in the control group. The lack of change in blood pressure values, which even increased (from 150.00 to 150.29), indicates that hypertension requires better management. In the results of the systolic blood pressure measurements before and after in the control group, it was found that 2 patients experienced an increase of 5 mmHg each, 2 patients experienced a decrease of 5 mmHg, while the rest showed no change in systolic blood pressure

In the results of the diastolic blood pressure measurements before and after in the control group, it was found that 1 patient experienced a decrease of 10 mmHg, while 16 others showed

no change in diastolic blood pressure. The lack of difference in both systolic and diastolic blood pressure before and after in the control group is due to the absence of cupping therapy in this group. Additionally, factors such as age, gender, adherence to medication, and smoking can affect patients' blood pressure. As a person ages, there is a decline in physiological function and overall resilience due to the aging process, which can make individuals more susceptible to diseases, including hypertension. The older a person gets, the higher their blood pressure tends to be due to several factors, such as decreased elasticity of blood vessels and diminished kidney function, which plays a role in regulating blood pressure (Tamamilang, Kandou, & Nelwan, 2018)

This study aligns with previous research conducted by Ina, Selly, & Feoh (2020), which found that the majority of patients aged 40-49 years, totaling 102 individuals (87.2%), experienced hypertension. This indicates a high risk of hypertension as age increases, with age being a major risk factor for the disease. Hypertension is less common in women because estrogen hormones contribute to the elasticity of blood vessels. When blood vessels are elastic, blood pressure tends to decrease; however, after menopause, women's blood pressure levels can equal those of men (Aristoteles, 2018). Many patients do not adhere to their medication regimens, as noted by Morisky and Munter (2009) in Syamsudin and Handayani (2019), stating that about 50% of hypertensive patients do not comply with prescribed antihypertensive medications, resulting in many patients being unable to control their blood pressure, which can ultimately lead to death. Therefore, the successful management of hypertension in patients is crucial to maintaining controlled blood pressure.

2. Blood Pressure Analysis of intervention Group

Based on the research results, it can be noted that the p-value is 0.000 < 0.05, which allows us to conclude that after cupping therapy, there is an effect on blood pressure changes at the Holistic Health House (RSH) Fiyas. This aligns with previous research that reported cupping therapy has an effect on lowering blood pressure (p < 0.05) (Astuti, 2018). A noticeable difference is observed in blood pressure measurements before and after cupping therapy; the initial measurement shows a high average value, with systolic blood pressure at 155.29 and diastolic at 89.76. After cupping therapy, the final measurements reduced to 140.76 for systolic blood pressure and 84.24 for diastolic blood pressure in the intervention group

This study aligns with the findings of Setyawan & Astuti (2022), which reported a significant difference in the experimental group with a p-value of 0.000 < 0.05. The study indicates that cupping therapy is effective in reducing blood pressure. This process occurs due to the removal of 'dirty' blood from the body during gentle puncturing of the skin, leading to a decrease in blood volume, muscle relaxation, and vasodilation, which is detected by baroreceptors and transmitted to the medulla oblongata. This activation stimulates either the sympathetic or parasympathetic nervous system to restore blood pressure to its normal levels (Ramadhani, 2021).

The decrease in blood pressure following cupping intervention is consistent with the Nitric Oxide (NO) theory, which states that in hypertensive conditions, cupping therapy is beneficial in assisting blood pressure reduction. This is attributed to the mechanism of cupping, where the process of puncturing with sterile needles can increase the production of Nitric Oxide (NO) or

Endothelium-Derived Relaxing Factor (EDRF), resulting in vasodilation of blood vessels, thereby lowering blood pressure (Setyawan & Astuti, 2022).

In this study, after a single cupping intervention, it was shown that cupping affects the reduction of initially high blood pressure. This occurs because the suction in the cupping technique stimulates the skin nerves and the nerves in the posterior horn of the spinal medulla through A delta and C fibers, as well as the spinothalamic tract towards the thalamus. This stimulation results in the release of endorphins, which are small peptides released into the hypothalamus, positively impacting mood and enhancing feelings of relaxation. Consequently, this leads to a decrease in heart rate, which in turn lowers cardiac output, affecting blood pressure. The stimulation of meridian points during cupping can also stimulate organs such as the nerves, liver, lungs, and kidneys, inducing a relaxing effect through the release of renin-angiotensin-aldosterone hormones, which can lower blood pressure (Asmah, 2023).

3. Analysis of the Difference Blood Pressure between Control and Intervention Group

Based on the research results, the average systolic blood pressure at the final measurement for the intervention group is 140.76, while the average systolic blood pressure for the control group is 150.29, with a total of 34 participants. The statistical test using the Independent T-test showed a P-value of 0.002, which is less than 0.05. Therefore, it can be concluded that cupping therapy has an effect on lowering blood pressure in hypertensive patients. Meanwhile, the average diastolic blood pressure at the final measurement for the intervention group is 84.24, and for the control group, it is 94.71, also with a total of 34 participants. The statistical test using the Paired Sample T-test produced a P-value of 0.000, indicating $P < 0.05$. Thus, it can be concluded that cupping therapy significantly impacts the reduction of blood pressure in hypertensive patients.

This study aligns with the findings of Amaliyah & Koto (2018) regarding cupping therapy's effect on blood pressure reduction. The research indicates that there have been changes in both systolic and diastolic mean values, suggesting a decrease in blood pressure following cupping therapy. According to Amaliyah & Koto (2018), cupping therapy administered to hypertensive patients significantly impacts their systolic and diastolic blood pressure before and after the treatment. The method for treating hypertension is based on the principle of activating organs, as cupping stimulates organs that regulate blood flow, such as the liver, kidneys, and heart, thereby helping to control blood pressure. The cupping process can affect mast cells, which release chemicals such as serotonin, histamine, bradykinin, and slow-reacting substances (SRS). These are responsible for the dilation of capillaries and arterioles and the resultant flare-up in the treated area. Capillary dilation can lead to the relaxation of tense muscles and a subsequent decrease in blood pressure due to systemic vasodilation (Istighfaroni, Wijaya, & Roni, 2021).

Cupping therapy has a significant effect on both systolic and diastolic blood pressure in hypertensive patients. This therapy can serve as an alternative and complementary treatment for managing hypertension. Regular use of cupping therapy is beneficial for helping hypertensive patients lower their blood pressure. In addition to its effectiveness and benefits in regulating blood pressure, this therapy enhances patients' ability to utilize traditional treatments, potentially mitigating side effects from conventional medical therapies. Cupping therapy also

promotes a sense of pleasure and comfort, which can reduce stress and anxiety levels in patients. Furthermore, patients feel supported by their families, and cupping therapy is perceived as a safer and more cost-effective option (Aprilyadi, 2022).

Based on the research findings, patients in the control group did not experience a decrease in blood pressure. This lack of change is attributed to the absence of cupping therapy interventions for the control group. Measurements were taken at two points: the initial measurement and the final measurement after the intervention. One patient, Mr. SM (Patient 11), did show a decrease in blood pressure, likely because he adjusted his diet and consistently took his medication daily. Conversely, two patients, Mr. AG (Patient 2) and Mrs. RM (Patient 6), experienced an increase in blood pressure. Observations indicated that Mr. AG was preoccupied with many thoughts and did not manage his eating habits, while Mrs. RM did not take her pharmacological medications and also failed to monitor her diet.

Conclusion

Based on the research findings, it can be concluded that cupping therapy has a significant effect on lowering blood pressure in patients. Patient Characteristics by Age found that Patients suffering from hypertension in both the intervention and control groups are predominantly aged between 40 and 60 years. Additionally, when examining the characteristics by gender, it was found that males have a higher prevalence of hypertension compared to females. Systolic and Diastolic Blood Pressure Before Cupping found The average systolic blood pressure in the intervention group before receiving cupping therapy was 155.29 mmHg, while the average diastolic blood pressure was 89.76 mmHg. And Systolic and Diastolic Blood Pressure After Cupping found After receiving cupping therapy, the average systolic blood pressure in the intervention group decreased to 140.76 mmHg, and the average diastolic blood pressure dropped to 84.24 mmHg. The P-value obtained was 0.000, which is less than α (0.05). This indicates a significant effect of cupping therapy on reducing blood pressure in hypertensive patients.

The limitations of this study include confounding factors such as the duration of hypertension, obesity, and comorbid conditions, were not investigated, which could lead to potential biases in the research findings, also, unexpected factors such as patients not showing up for the study despite prior communication and reservations.

Ethics approval and consent to participate

This study was conducted in accordance with ethical standards and received approval from the relevant ethics committee with the number of etichal clearance is 079/EC/KEPK_STIKES_KENDAL/XII/ 2024. Informed consent was obtained from all participants prior to their inclusion in the study. Participants were provided with detailed information about the study's purpose, procedures, potential risks, and benefits, ensuring they understood their rights, including the right to withdraw at any time without any impact on their medical care. All data collected were kept confidential and used solely for research purposes

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