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Effectiveness of Straight Walking on Selected Parameters Among Hypertensive Participants Attending Outpatient Department in Selected Urban Primary Health Centre at Puducherry

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***Abstract*---**Chronic non-communicable diseases (NCDs) are the number one cause of mortality and morbidity in the world. World Health Organization and Global Burden of Disease (GBD) study have reported that cardiovascular diseases (CVD) are the most important reason for fatality and disability. Age-adjusted mortality has increased by 31% in last 25 years. Case control studies have reported that hypertension is most important risk factor for CVD in India. The present study was to conduct to evaluate the effectiveness of straight walking on selected parameters among hypertensive participants attending outpatient department in selected urban Primary Health Centre at Puducherry. An experimental pre and posttest control group design was utilized. By using simple random sampling technique 60 subjects were selected. The data were collected by using semi-structured questionnaire (demographic performa), bio-physiological and bio-chemical parameters. The data were analyzed by descriptive and inferential statistics. The results showed that the independent 't' test value for heart rate (t=3.800, p=0.0001), respiratory rate (t=4.089, p=0.0001), SPO2 (t=4.068, p=0.0001) and HDL (t=6.018, p=0.0001) was found to statistically significant at p<0.001 level. The calculated student independent 't' test value for temperature (t=2.572, p=0.013), systolic BP (t=2.206, p=0.032), diastolic BP (t=2.427, p=0.018), BMI (t=2.094, p=0.041), Total Cholesterol (t=2.230, p=0.030), LDL

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(t=2.183, p=0.033) and triglyceride (t=2.072, p=0.043) was found to statistically significant at p<0.05 level. This clearly infers that straight walking was found to be effective in improving the level of biophysiological parameters and lipid profiles among hypertensive clients in the experimental group than the clients in the control group.

***Keywords*---**attending outpatient, health centre, hypertension, hypertensive, straight walking.

Introduction

Non-communicable diseases refer to a group of conditions that are not mainly caused by an acute infection, result in long-term health consequences and often create a need for long-term treatment and care. These conditions include cardiovascular diseases, cancers, diabetes and chronic lung illnesses. Hypertension is a chronic state of concern due to its vital part in the causation of coronary heart disease, stroke and other vascular complications. It is the commonest cardiovascular disorder, posting a major public health challenge to inhabitants in socio-economic and epidemiological transition. It is one of the considerable risk factors for cardiovascular mortality, which accounts for 20-50 percent of all deaths.

During the past four decades, the elevated worldwide blood pressure levels have shifted from high-income countries to low-income countries in south Asia and sub-Saharan Africa due to contradictory trends, while blood pressure has been invariably peak in central and eastern Europe. The number of adults with raised blood pressure increased from 594 million in 1975 to 1.13 billion in 2015, with the increase great extent in low-income and middle-income countries. Hypertension is directly accountable for 57% of all stroke deaths and 24% of all coronary heart disease deaths in India. At an underestimate, there are 31.5 million hypertensive cases in rural and 34 million in urban populations. A total of 70% of these would be stage I hypertension (140-159 and/or diastolic BP 85-89 mm Hg). Recent reports show that borderline hypertension (130-139 and/or diastolic BP 85-89 mm Hg) and stage I hypertension carry a remarkable cardiovascular risk and there is a requirement to decrease this blood pressure. Hypertension was significantly greater in those who take alcohol and in subjects with elevation in total cholesterol level but in multivariate analysis only age, education and cholesterol levels were associated independently with hypertension.

M. Hargreaves (2020), conducted a cross sectional study on physiological exercise to metabolic action, for 30mins daily exercise. The study showed that there is notable increase in muscular contraction where by neuro hormonal system plotted to guaranty actual fuel supply for muscle workout. Where there is a growth in metabolic rates within the liver enhances and regulate the level of hormone and substrate supply integrate pathways of carbohydrate, fat and amino acid metabolism whereby decreases glucose level, fatty acids which are stored as triglycerides in the muscles and amino acid. Process of oxygen increases as work

out intensity increases, secretion of hormone is increased and released with response to activity related to exercise as there is an increase in metabolic rate.

Simona Mandini et al. (2018), conducted a cross sectional study, the result revealed that walking and hypertension has got a great depletion in subjects with higher baseline of systolic blood pressure following six months of guided walking with weekly 150 mins for six months and the result revealed systolic blood pressure was remarkably reduced 140 to 129, 150 to 139. SBP was significantly reduced in all subgroups i.e. (p value < 0.001) – 21.3mm/Hg. According to a Global survey, the number of persons with hypertension and diabetes is projected to raise from 118 million in 2010 to 2014 million in 2025, with almost equal numbers of men and women. Walking every day can greatly improves health by lowers blood pressure, strengthen circulation, lose weight, improve sleep and feel more confident about body. It is considered as a vital part of physiological and psychological health. Daily walking will make feel better and become more productive and happier. According to WHO census, 48% of death has been reported due to non-communicable disease rather than communicable disease in developed and developing countries.

Need for the research

- According to global census by WHO (2010), the number of people with uncontrolled hypertension rose from 600 million in 1990 to nearly 1 billion in 2010 and it triples by 2020.
- The prevalence of hypertension has been increasing in developing countries like India. The prevalence of hypertension among adults living in urban area was estimated that 14% of people were affected with hypertension in Chennai. Amongst 31% of them were men and 36% of them were women. (WHO, 2010) In Puducherry, the prevalence rate of hypertension is 18.3% and the prevalence of hypertension was more in males 19.1% than in females 17.5%; %, and 1.2% of the total subjects had grade I, Grade II, and Grade III, respectively. Only 33.8% of them were aware of their hypertensive status. Hypertensives of 32.1% were on treatment, and 12.5% adequately controlled their blood pressure. About 6.9% of the total hypertensive had severe hypertension. (Madanmohan, 2010)
- There are various non-pharmacological experimental studies for managing blood pressure (blood pressure) like eight walking, yoga, relaxation, straight walking, techniques and treadmill walk have been proven to be of use. These interventions modify the risk factors accountable for the evolution of hypertension.
- Recent studies show that there is a drop in hypertension with non-pharmacological intervention among hypertensive participants by different researchers. This made the researcher to do a non-pharmacological intervention of straight walking, to low hypertension and since the prevalence rate shows the adult groups are the vulnerable group to hypertension. As a result the researcher selected the adult group of age between 40 – 60 years in this study.

Statement of the problem

A study to evaluate the effectiveness of straight walking on selected parameters among hypertensive participants attending out patient department in selected urban Primary Health Centre at Puducherry.

Objectives

- To assess the pretest level of biophysiological and biochemical parameters among hypertensive participants in both groups
- To assess the posttest level of biophysiological and biochemical parameters among hypertensive participants in both groups
- To evaluate the effectiveness of straight walking on blood pressure among hypertensive participants in both groups
- To associate and correlate the effectiveness of straight walking with selected demographic variables

Methodology

Research design

Experimental pre and post comparative design.

Target population and sampling

By using simple random sampling technique (Lottery method) 30 subjects were selected in government urban Primary Health Centres, Puducherry (Gorimedu and Metupalayam) who fulfils the inclusion criteria namely, i**.** diagnosed within twelve months as hypertension both male and female ii. belonging to the age group between 40 - 60 years iii. willing to participate in the study iv. able to walk independently only.

- Straight walk group: 30 subjects belong to straight walking (Gorimedu PHC)
- Control group: 30 subjects without intervention but under prescribed regular medication (Mettupalayam PHC)

Data collection

Prior permission from the concerned authorities was obtained. The researcher introduced and explained about the topic, objective and purpose of the study to each subject. Informed consent was taken from the study subjects. The researcher collected the socio-demographic variables through a semi-structured questionnaire. Experimental group and control group were selected under simple random technique. Subjects were selected according to the inclusion and exclusion criteria. The data to be collected using the following tools:

- Demographic Performa includes:- Client's Name, Sample Number, Age in years, Gender, Marital status, Occupation, dietary habits, history of hypertension diagnosis, history of smoking, history of alcohol consumption,

engaged in physical activity, type of physical exercise, history of dizziness while walking.

- Bio-physiological parameters includes:- Temperature, pulse, respiration, SpO2, height, weight, body mass index, systolic blood pressure, diastolic blood pressure
- Bio-chemical parameters includes:- Observation of lipid profile- total cholesterol, high density lipo protein, low density lipo protein, triglycerides

Intervention

In experimental group, a straight walking practice was performed in the allotted place of primary health centre. Participants were allowed to walk for 20mins morning and 20mins evening, weekly four days which was observed and monitored in the calendar and attendance marking by the researcher and research assistants

Data analysis
Pre-Test

Pre-test evaluation of existing bio-physiological parameter among straight walk group and control group (Temperature, pulse, respiration, SpO2, height, weight, body mass index, systolic blood pressure, diastolic blood pressure). Pre-test evaluation of existing bio-chemical parameter among straight walk group and control group (Observation of lipid profile- total cholesterol, high density lipo protein, low density lipo protein, triglycerides). Daily attendance, calendar markings and grid chart recording.

Post-test

Post-test evaluation of bio-physiological parameter among straight walk group and control group (Temperature, pulse, respiration, SpO2, height, weight, body mass index, systolic blood pressure, diastolic blood pressure). The participants in both groups were monitored for the parameters at the end of first, second and third month. Post-test evaluation of bio-chemical parameter among straight walk group and control group (Observation of lipid profile- total cholesterol, high density lipo protein, low density lipo protein, triglycerides). The participants in both groups were monitored for the parameters at the end of first, second and third month. Daily attendance, calendar markings and grid chart recording. Data analyses were done according to the objectives of the study both descriptive and inferential statistics. Result will be tabulated by the following statistical methods such as Standard Deviation, Chi-Square Test.

Ethical review

The necessary permission was got from the health department, director, deputy director, dean, principal and also from the local administration of the community and ethical committee. The samples were selected based on inclusion criteria. Informed consent and confidentiality were assured to the study subjects. The subjects were informed that their participation was voluntary, had the freedom to withdraw from the study as and when they liked to do so.

Data analysis and interpretation

Table 1
Comparison of pretest and post test level of biophysiological parameters and lipid profiles among hypertensive clients in Experimental Group

n = 30 Parameters	Test	Mean	S.D	Mean Difference	Paired 't' test value
Temperature	Pretest Post Test	37.19 37.41	0.33 0.46	0.22	t=4.164 p=0.0001, S***
Heart Rate	Pretest Post Test	81.13 85.07	4.29 4.16	3.94	t=7.971 p=0.0001, S***
Respiratory rate	Pretest Post Test	19.60 20.60	1.33 1.40	1.00	t=3.525 p=0.001, S***
SPO_2	Pretest Post Test	98.40 99.53	0.89 0.73	1.13	t=6.901 p=0.0001, S***
Systolic BP	Pretest Post Test	159.40 152.73	12.65 10.36	6.67	t=8.160 p=0.0001, S***
Diastolic BP	Pretest Post Test	99.27 95.77	5.44 5.95	3.50	t=12.383 p=0.0001, S***
BMI	Pretest Post Test	32.32 30.69	2.97 3.03	1.63	t=11.229 p=0.0001, S***
Total cholesterol	Pretest Post Test	292.40 278.40	25.21 22.80	14.0	t=13.085 p=0.0001, S***
HDL	Pretest Post Test	40.20 46.13	4.74 5.46	5.93	t=19.833 p=0.0001, S***
LDL	Pretest Post Test	197.63 182.43	27.21 23.66	15.20	t=10.283 p=0.0001, S***
Triglyceride	Pretest Post Test	144.70 135.93	17.16 14.77	8.77	t=9.921 p=0.0001, S***

***p≤0.001, S – Significant

The table 1 shows that paired 't' test was computed to compare the post test level of biophysiological parameters and lipid profiles among hypertensive clients in the Experimental Group. The table shows that the calculated paired 't' test value for temperature (t=4.164, p=0.0001), heart rate (t=7.971, p=0.0001), respiratory rate (t=3.525, p=0.001), SPO_2 (t=6.901, p=0.0001), systolic BP (t=8.160, p=0.0001), diastolic BP (t=12.383, p=0.0001), BMI (t=11.229, p=0.0001), total cholesterol (t=13.085, p=0.0001), HDL (t=19.833, p=0.0001), LDL (t=10.283, p=0.0001), triglyceride (t=9.921, p=0.0001) was found to statistically significant at p<0.001 level. This clearly infers that straight walking was found to be effective in improving the level of Biophysiological parameters and lipid profiles among hypertensive clients in the experimental group.

Table 2
Comparison of pretest and post test level of biophysiological parameters and lipid profiles among hypertensive clients in Control Group

n = 30 Parameters	Test	Mean	S.D	Mean Difference	Paired 't' test value
Temperature	Pretest Post Test	37.18 37.15	0.37 0.33	0.03	t=1.542 p=0.134, N.S
Heart Rate	Pretest Post Test	80.40 79.87	5.99 6.24	0.53	t=0.360 p=0.722, N.S
Respiratory rate	Pretest Post Test	19.20 19.20	1.24 1.24	-	-
SPO_2	Pretest Post Test	98.77 98.80	0.68 0.66	0.03	t=0.328 p=0.745, N.S
Systolic BP	Pretest Post Test	159.17 159.30	12.47 12.59	0.13	t=1.000 p=0.326, N.S
Diastolic BP	Pretest Post Test	99.07 99.30	5.32 5.31	0.23	t=1.756 p=0.090, N.S
BMI	Pretest Post Test	32.32 32.31	2.96 2.96	0.01	t=1.000 p=0.326, N.S
Total cholesterol	Pretest Post Test	292.40 292.20	25.21 25.09	0.20	t=1.795 p=0. 083, N.S
HDL	Pretest Post Test	38.70 38.40	4.19 4.45	0.30	t=1.201 p=0.240, N.S
LDL	Pretest Post Test	197.60 197.57	27.24 27.22	0.03	t=0.328 p=0.745, N.S
Triglyceride	Pretest Post Test	144.77 144.53	17.15 17.29	0.24	t=1.756 p=0.090, N.S

N.S – Not Significant

The table 2 shows that paired 't' test was computed to compare the pretest and post test level of biophysiological parameters and lipid profiles among hypertensive clients in the Control Group. The table shows that the calculated paired 't' test value for temperature (t=1.542, p=0.134), heart rate (t=0.360, p=0.722), systolic BP (t=0.328, p=0.745), diastolic BP (t=1.756, p=0.090), BMI (t=1.000, p=0.326), total cholesterol (t=1.795, p=0.083), HDL (t=1.201, p=0.240), LDL (t=0.328, p=0.0.745) and triglyceride (t=1.756, p=0.090) was not found to statistically significant. The table shows that the calculated paired 't' test value for was found to statistically significant at $p<0.05$ level.

Table 3
Comparison of post test level of biophysiological parameters and lipid profiles among hypertensive clients between Experimental Group and Control Group

N = 60(30+30) Parameters	Test	Mean	S.D	Mean Difference	Student Independent 't' test value
Temperature	Experimental	37.41	0.46	0.27	t=2.572

	Control	37.15	0.33		p=0.013, S*
Heart Rate	Experimental	85.07	4.16	5.20	t=3.800
	Control	79.87	6.24		p=0.0001, S***
Respiratory rate	Experimental	20.60	1.40	1.40	t=4.089
	Control	19.20	1.24		p=0.0001, S***
SPO_2	Experimental	99.53	0.73	0.73	t=4.068
	Control	98.80	0.66		p=0.0001, S***
Systolic BP	Experimental	152.73	10.36	6.57	t=2.206
	Control	159.30	12.59		p=0.032, S*
Diastolic BP	Experimental	95.77	5.95	3.53	t=2.427
	Control	99.30	5.31		p=0.018, S*
BMI	Experimental	30.69	3.03	1.63	t=2.094
	Control	32.32	2.96		p=0.041, S*
Total cholesterol	Experimental	278.40	22.80	13.80	t=2.230
	Control	292.20	25.09		p=0.030, S*
HDL	Experimental	46.13	5.46	7.73	t=6.018
	Control	38.40	4.45		p=0.0001, S***
LDL	Experimental	182.43	23.66	14.30	t=2.183
	Control	196.73	26.98		p=0.033, S*
Triglyceride	Experimental	135.93	14.77	8.60	t=2.072
	Control	144.53	17.29		p=0.043, S*

***p≤0.001, *p<0.05, S – Significant, N.S – Not Significant

The table 3 shows that student independent 't' test was computed to compare the post test level of biophysiological parameters and lipid profiles among hypertensive clients between Experimental Group and Control Group. The independent 't' test value for heart rate (t=3.800, p=0.0001), respiratory rate (t=4.089, p=0.0001), SPO_2 (t=4.068, p=0.0001) and HDL (t=6.018, p=0.0001) was found to statistically significant at p<0.001 level. This clearly infers that straight walking was found to be effective in improving the level of biophysiological parameters and lipid profiles among hypertensive clients in the experimental group than the clients in the control group.

The table also shows that the calculated student independent 't' test value for temperature (t=2.572, p=0.013), systolic BP (t=2.206, p=0.032), diastolic BP (t=2.427, p=0.018), BMI (t=2.094, p=0.041), Total Cholesterol (t=2.230, p=0.030), LDL (t=2.183, p=0.033) and triglyceride (t=2.072, p=0.043) was found to statistically significant at p<0.05 level. This clearly infers that straight walking was found to be effective in improving the level of biophysiological parameters and lipid profiles among hypertensive clients in the experimental group than the clients in the control group.

Table 4
Association of post test scores of biophysiological parameters and lipid profiles among hypertensive clients with selected demographic variables in the Experimental Group

n = 30

Demographic Variables	Temperature One way ANOVA/ Unpaired 't' test value	Heart Rate One way ANOVA/ Unpaired 't' test value	Respiratory Rate One way ANOVA/ Unpaired 't' test value	SPO_2 One way ANOVA/ Unpaired 't' test value
Age in years 40 – 45 years 46 – 50 years 51 – 55 years 56 – 60 years	F=2.883 p=0.055 N.S	F=0.554 p=0.650 N.S	F=1.395 p=0.267 N.S	F=1.701 p=0.191 N.S
Gender Male Female Others	t=1.491 p=0.156 N.S	t=1.411 p=0.172 N.S	t=2.276 p=0.033 S*	t=2.444 p=0.021 S*
Occupation Households Self employed Professionals	F=1.193 p=0.310 N.S	F=1.093 p=0.350 N.S	F=2.277 p=0.122 N.S	F=3.162 p=0.058 N.S
Dietary habits Vegetarian Non-vegetarian	-	-	-	-
History of hypertension diagnosis Recent 3 months Recent 3 – 6 months Recent 6 – 9 months Recent 9 – 12 months	F=6.816 p=0.004 S**	F=0.028 p=0.973 N.S	F=1.470 p=0.248 N.S	F=6.173 p=0.006 S**
History of smoking Never Sometimes Often	F=4.199 p=0.026 S*	F=0.871 p=0.430 N.S	F=4.050 p=0.029 S*	F=2.489 p=0.102 N.S
History of consumption of alcohol Never Sometimes Often	F=1.564 p=0.228 N.S	F=0.878 p=0.427 N.S	F=1.503 p=0.241 N.S	F=0.031 p=0.970 N.S
Engaged with any physical exercise Yes No	t=0.858 p=0.401 N.S	t=0.566 p=0.577 N.S	t=1.018 p=0.317 N.S	t=1.165 p=0.255 N.S

n = 30

Demographic Variables	Temperature One way ANOVA/ Unpaired 't' test value	Heart Rate One way ANOVA/ Unpaired 't' test value	Respiratory Rate One way ANOVA/ Unpaired 't' test value	SPO_2 One way ANOVA/ Unpaired 't' test value
Type of physical exercise				
Walking	t=0.858	t=0.566	t=1.018	t=1.165
Gym work out	p=0.401	p=0.577	p=0.317	p=0.255
Yoga and asana	N.S	N.S	N.S	N.S
No such physical exercise				
History of dizziness while walking	t=0.384	t=1.622	t=1.265	t=1.268
Never	p=0.714	p=0.116	p=0.245	p=0.235
Sometimes	N.S	N.S	N.S	N.S
Often				

**p<0.01, *p<0.05, S – Significant, N.S – Not Significant

The table 4 shows that the demographic variables history of hypertension diagnosis (χ^2=6.816, p=0.004) and history of smoking (χ^2=4.199, p=0.026) had shown statistically significant association with post test level of temperature at p<0.01 and p<0.05 level respectively. The table also shows that none of the demographic variables had shown statistically significant association with post test level of heart rate among hypertensive clients. The table 4 further shows that the demographic variables gender (χ^2=2.276, p=0.033) and history of smoking (χ^2=4.050, p=0.029) had shown statistically significant association with post test level of respiratory rate at p<0.05 level respectively. The demographic variables gender (χ^2=2.444, p=0.021) and history of hypertension diagnosis (χ^2=6.173, p=0.006) had shown statistically significant association with post test level of SPO_2 at p<0.05 and p<0.01 level respectively and the other demographic variables had not shown statistically significant association with post test level of SPO_2 among hypertensive clients.

Table 5
Association of post test scores of biophysiological parameters and lipid profiles among hypertensive clients with their selected demographic variables in the Experimental Group

n = 30

Demographic Variables	Systolic BP One way ANOVA/ Unpaired 't' test value	Diastolic BP One way ANOVA/ Unpaired 't' test value	BMI One way ANOVA/ Unpaired 't' test value	Total Cholesterol One way ANOVA/ Unpaired 't' test value
Age in years	F=0.610	F=1.153	F=0.823	F=0.276

n = 30

Demographic Variables	Systolic BP One way ANOVA/ Unpaired 't' test value	Diastolic BP One way ANOVA/ Unpaired 't' test value	BMI One way ANOVA/ Unpaired 't' test value	Total Cholesterol One way ANOVA/ Unpaired 't' test value
40 – 45 years 46 – 50 years 51 – 55 years 56 – 60 years	p=0.615 N.S	p=0.346 N.S	p=0.493 N.S	p=0.842 N.S
Gender Male Female Others	t=0.421 p=0.680 N.S	t=0.511 p=0.617 N.S	t=0.216 p=0.831 N.S	t=0.443 p=0.665 N.S
Occupation Households Self employed Professionals	F=1.519 p=0.237 N.S	F=2.063 p=0.147 N.S	F=1.806 p=0.184 N.S	F=0.220 p=0.804 N.S
Dietary habits Vegetarian Non-vegetarian	-	-	-	-
History of hypertension diagnosis Recent 3 months Recent 3 – 6 months Recent 6 – 9 months Recent 9 – 12 months	F=2.068 p=0.146 N.S	F=1.266 p=0.298 N.S	F=4.351 p=0.023 S*	F=0.205 p=0.816 N.S
History of smoking Never Sometimes Often	F=2.761 p=0.081 N.S	F=2.941 p=0.070 N.S	F=4.300 p=0.024 S*	F=0.017 p=0.983 N.S
History of consumption of alcohol Never Sometimes Often	F=1.916 p=0.167 N.S	F=3.612 p=0.041 S*	F=2.718 p=0.084 N.S	F=0.013 p=0.987 N.S
Engaged with any physical exercise Yes No	t=0.777 p=0.448 N.S	t=1.157 p=0.261 N.S	t=1.742 p=0.095 N.S	t=0.580 p=0.568 N.S
Type of physical exercise Walking Gym work out Yoga and asana No such physical	t=0.777 p=0.448 N.S	t=1.157 p=0.261 N.S	t=1.742 p=0.095 N.S	t=0.580 p=0.568 N.S

n = 30

Demographic Variables	Systolic BP One way ANOVA/ Unpaired 't' test value	Diastolic BP One way ANOVA/ Unpaired 't' test value	BMI One way ANOVA/ Unpaired 't' test value	Total Cholesterol One way ANOVA/ Unpaired 't' test value
exercise				
History of dizziness while walking	t=0.360	t=0.738	t=0.449	t=1.335
Never	p=0.733	p=0.481	p=0.665	p=0.194
Sometimes	N.S	N.S	N.S	N.S
Often				

*p<0.05, S – Significant, N.S – Not Significant

The table 5 shows that the demographic variable history of consumption of alcohol (χ^2=3.612, p=0.041) had shown statistically significant association with post test level of diastolic BP among hypertensive clients at p<0.05 level and the other demographic variables had not shown statistically significant association with post test level of diastolic BP among hypertensive clients. The table 5 further shows that the demographic variables history of hypertension diagnosis (χ^2=4.351, p=0.023) and history of smoking (χ^2=4.300, p=0.024**)** had shown statistically significant association with post test level of BMI among hypertensive clients at p<0.05 level and the other demographic variables had not shown statistically significant association with post test level of BMI among hypertensive clients.

Table 6
Association of post test scores of biophysiological parameters and lipid profiles among hypertensive clients with their selected demographic variables in the Experimental Group

n = 30

Demographic Variables	HDL One way ANOVA/ Unpaired 't' test value	LDL One way ANOVA/ Unpaired 't' test value	TG One way ANOVA/ Unpaired 't' test value
Age in years			
40 – 45 years	F=0.310	F=0.611	F=0.126
46 – 50 years	p=0.818	p=0.614	p=0.944
51 – 55 years	N.S	N.S	N.S
56 – 60 years			
Gender			
Male	t=0.259	t=0.519	t=0.059
Female	p=0.800	p=0.608	p=0.954
Others	N.S	N.S	N.S
Occupation	F=1.032	F=0.084	F=1.850
Households	p=0.370	p=0.920	p=0.177
Self employed	N.S	N.S	N.S

n = 30

Demographic Variables	HDL One way ANOVA/ Unpaired 't' test value	LDL One way ANOVA/ Unpaired 't' test value	TG One way ANOVA/ Unpaired 't' test value
Professionals Dietary habits Vegetarian Non-vegetarian	-	-	-
History of hypertension diagnosis Recent 3 months Recent 3 – 6 months Recent 6 – 9 months Recent 9 – 12 months	F=1.594 p=0.222 N.S	F=1.480 p=0.245 N.S	F=3.265 p=0.054 N.S
History of smoking Never Sometimes Often	F=1.495 p=0.242 N.S	F=1.685 p=0.204 N.S	F=4.477 p=0.021 S*
History of consumption of alcohol Never Sometimes Often	F=1.025 p=0.372 N.S	F=0.273 p=0.763 N.S	F=2.814 p=0.078 N.S
Engaged with any physical exercise Yes No	t=0.233 p=0.818 N.S	t=1.157 p=0.258 N.S	t=0.983 p=0.334 N.S
Type of physical exercise Walking Gym work out Yoga and asana No such physical exercise	t=0.233 p=0.818 N.S	t=1.157 p=0.258 N.S	t=0.983 p=0.334 N.S
History of dizziness while walking Never Sometimes Often	t=0.895 p=0.380 N.S	t=1.020 p=0.321 N.S	t=292 p=0.774 N.S

*p<0.05, S – Significant, N.S – Not Significant

The table 6 shows that none of the demographic variables had shown statistically significant association with post test level of HDL and LDL among hypertensive clients. The variable history of smoking (χ^2=4.477, p=0.021) had shown statistically significant association with post test level of triglyceride among hypertensive clients at p<0.01 level and the other demographic variables had not shown statistically significant association with post test level of triglyceride among hypertensive clients.

Discussion

The findings of the study showed that paired 't' test was computed to compare the post test level of biophysiological parameters and lipid profiles among hypertensive clients in the Experimental Group. The table shows that the calculated paired 't' test value for temperature (t=4.164, p=0.0001), heart rate (t=7.971, p=0.0001), respiratory rate (t=3.525, p=0.001), SPO_2 (t=6.901, p=0.0001), systolic BP (t=8.160, p=0.0001), diastolic BP (t=12.383, p=0.0001), BMI (t=11.229, p=0.0001), total cholesterol (t=13.085, p=0.0001), HDL (t=19.833, p=0.0001), LDL (t=10.283, p=0.0001), triglyceride (t=9.921, p=0.0001) was found to statistically significant at p<0.001 level. This clearly infers that straight walking was found to be effective in improving the level of Biophysiological parameters and lipid profiles among hypertensive clients in the experimental group.

The findings showed that paired 't' test was computed to compare the pretest and post test level of biophysiological parameters and lipid profiles among hypertensive clients in the Control Group. The calculated paired 't' test value for temperature (t=1.542, p=0.134), heart rate (t=0.360, p=0.722), systolic BP (t=0.328, p=0.745), diastolic BP (t=1.756, p=0.090), BMI (t=1.000, p=0.326), total cholesterol (t=1.795, p=0.083), HDL (t=1.201, p=0.240), LDL (t=0.328, p=0.0.745) and triglyceride (t=1.756, p=0.090) was not found to statistically significant. The table shows that the calculated paired 't' test value for was found to statistically significant at p<0.05 level.

The findings showed that student independent 't' test was computed to compare the post test level of biophysiological parameters and lipid profiles among hypertensive clients between Experimental Group and Control Group. The independent 't' test value for heart rate (t=3.800, p=0.0001), respiratory rate (t=4.089, p=0.0001), SPO_2 (t=4.068, p=0.0001) and HDL (t=6.018, p=0.0001) was found to statistically significant at p<0.001 level. This clearly infers that straight walking was found to be effective in improving the level of biophysiological parameters and lipid profiles among hypertensive clients in the experimental group than the clients in the control group.

The findings also shows that the calculated student independent 't' test value for temperature (t=2.572, p=0.013), systolic BP (t=2.206, p=0.032), diastolic BP (t=2.427, p=0.018), BMI (t=2.094, p=0.041), Total Cholesterol (t=2.230, p=0.030), LDL (t=2.183, p=0.033) and triglyceride (t=2.072, p=0.043) was found to statistically significant at p<0.05 level. This clearly infers that straight walking was found to be effective in improving the level of biophysiological parameters and lipid profiles among hypertensive clients in the experimental group than the clients in the control group.

The findings of the study showed that the demographic variables history of hypertension diagnosis (χ^2=6.816, p=0.004) and history of smoking (χ^2=4.199, p=0.026) had shown statistically significant association with post test level of temperature at p<0.01 and p<0.05 level respectively. The table also shows that none of the demographic variables had shown statistically significant association with post test level of heart rate among hypertensive clients. The also shows that the demographic variables gender (χ^2=2.276, p=0.033) and history of smoking

(χ^2=4.050, p=0.029) had shown statistically significant association with post test level of respiratory rate at p<0.05 level respectively. The demographic variables gender (χ^2=2.444, p=0.021) and history of hypertension diagnosis (χ^2=6.173, p=0.006) had shown statistically significant association with post test level of SPO_2 at p<0.05 and p<0.01 level respectively and the other demographic variables had not shown statistically significant association with post test level of SPO_2 among hypertensive clients.

The findings shows that the demographic variable history of consumption of alcohol (χ^2=3.612, p=0.041) had shown statistically significant association with post test level of diastolic BP among hypertensive clients at p<0.05 level and the other demographic variables had not shown statistically significant association with post test level of diastolic BP among hypertensive clients. The table 5 further shows that the demographic variables history of hypertension diagnosis (χ^2=4.351, p=0.023) and history of smoking (χ^2=4.300, p=0.024) had shown statistically significant association with post test level of BMI among hypertensive clients at p<0.05 level and the other demographic variables had not shown statistically significant association with post test level of BMI among hypertensive clients. The findings shows that none of the demographic variables had shown statistically significant association with post test level of HDL and LDL among hypertensive clients. The variable history of smoking (χ^2=4.477, p=0.021) had shown statistically significant association with post test level of triglyceride among hypertensive clients at p<0.01 level and the other demographic variables had not shown statistically significant association with post test level of triglyceride among hypertensive clients.

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