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A STUDY TO ASSESS THE EFFECTIVENESS OF BATES THERAPY ON VISUAL ACUITY AMONG OLD AGE PEOPLE RESIDING IN SELECTED OLD AGE HOME AT ERODE DISTRICT

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ABSTRACT

Aim: The main objectives of this study were to determine the effectiveness of Bates therapy on visual acuity, and to find out the association between pre-test and post-test scores on visual acuity among old age people.

Methods: A quasi-experimental design was carried out on 60 old age people with visual problems residing in Assisi Karuna Nilaya, Buthikottai, Erode Dt. with 30 participants in the experimental group and 30 participants in the control groupby using a purposive sampling technique. Visual acuity assessment scale (Snellen chart) was used to assess the visual problems among old age people in pre and post-test. The experimental group received Bates therapy as an intervention. It is a series of 5 steps which includes stretching, blinking, swinging, sunning, and palming or cupping given for 15 minutes daily once and control group received no treatment, and a post-test was done after 15 days using a visual acuity scale.

Results: In the analysis of association between the post test score and their selected demographic variables among old age people with visual acuity. Chi square value of age in years was 0.119, gender was 0.039, educational status was 4.767, marital status was 1.862, diet is 0.027, watering of eye was 5.029, visual disturbance 1.833 and using spectacles are1.663.

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Conclusion: The result of the study showed that there was a higher incidence of visual acuity among the old age people aged above 60 years. The present study was intended to assess the effectiveness of Bates therapy on visual acuity among old age people residing in selected old age home at Erode District. The report of this study found that Bates therapy was inexpensive and more effective in improving visual acuity.

Keywords: bates therapy on visual acuity, old age people, old age home

INTRODUCTION

The Bates Method involves vision re-education by relaxing the eyes and mind to restore natural, effortless eyesight, encompassing central clarity and expansive peripheral vision. Contrary to common belief, it does not involve eye exercises but focuses on changing visual straining habits that contribute to eyesight issues. Achieving permanent improvement involves adopting natural, healthy habits throughout the day, starting with recognizing and addressing eye strain, a step often overlooked initially. The Bates Method is an educational approach centered on relearning good eyesight habits through dynamic relaxation, releasing mental strain, and reducing eye muscle tension, aiming to bring back visual clarity as part of daily life. **(Bates, 2021)**

NEED FOR THE STUDY

Bates Therapy has been demonstrated as highly effective in alleviating visual issues, as the researcher experienced personal improvement in vision. However, the existing literature reveals a scarcity of studies on Bates therapy for visual problems in the elderly, indicating identified gaps. Recognizing this, the study aims to address these gaps through a cost-effective, easily accessible therapeutic intervention that can reduce surgery costs and enhance the independent lives of elderly individuals. Consequently, an experimental study is proposed to compare the effectiveness of Bates therapy in addressing visual problems among the elderly. **(Gopal Samy.M, et.al.,, 2019)**

The researcher selected this research project due to the increasing necessity of addressing the difficulties linked with aging and visual impairment, a combination that notably impacts independence and overall quality of life. Acknowledging the potential of non-pharmacological interventions to offer relief and enhancements in visual functions presents a hopeful direction for advancing care for the elderly. This study aligns with a broader dedication to enhancing geriatric healthcare and advocates for the exploration of innovative and accessible solutions to assist aging populations in preserving their autonomy and experiencing an improved quality of life. This underscores the significance of holistic and preventative approaches in healthcare.

A study to assess the effectiveness of Bates therapy on visual acuity among old age people residing in selected old age home at Erode District.

OBJECTIVES

1. To assess the level of visual acuity among old age people residing in selected old age home at Erode District.
2. To determine the effectiveness of Bates therapy on visual acuity among old age people residing in selected old age home at Erode District.
3. To find out the association between pre-test and post-test scores on visual acuity among old age people residing in selected old age home at Erode District.

RESEARCH HYPOTHESES

$\mathbf{H_1}$ -There is a significant difference between pre-test and post-test levels of visual acuity among people

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residing in selected old age home at Erode District.
H_2 - There is a significant difference between experimental group post-test and control group post-test levels of visual acuity among people residing in selected old age home at Erode District.
H_3 -There will be a significant between experimental group pre-test scores on visual acuity with selected demographic variables among old age people residing in selected old age home at Erode District.

RESEARCH APPROACH

Consequently, a quantitative research approach is imperative to gauge the effectiveness of the intervention in this context.

RESEARCH DESIGN

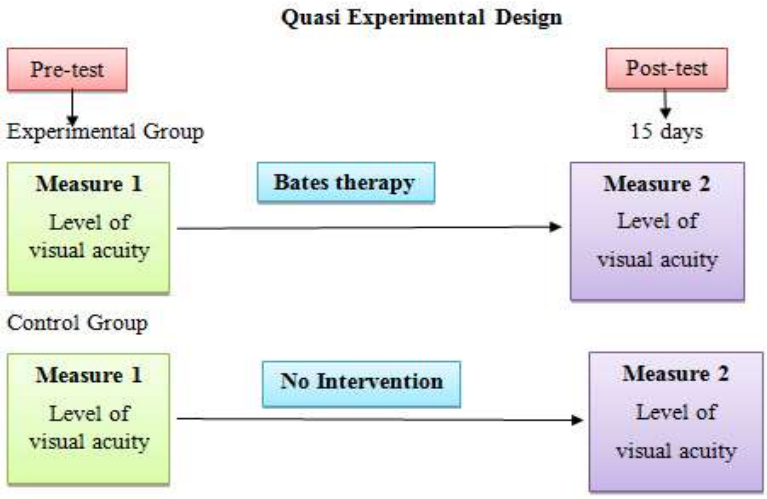
The design used for the present study was quasi experimental research design where the two group pre and post-test design was selected to assess the effectiveness of Bates therapy on visual acuity among selected old age homes.

Diagrammatic representation of the research design

Purposively selected old age people	Pre-test	Treatment	Post-test
Experimental group	O_1	X_1	O_2
Control group	O_1	X_0	O_2

Keywords
O_1 : Pre-test on old age people regarding visual problems in experimental group and control group.
X_1 : Bates Therapy
X_0 : No intervention given
O_2 : Post-test on old age people regarding visual problems in experimental and control group.

Research design calendar



SETTING OF THE STUDY

The setting chosen for the study was Assissi Karuna Nilaya, Buthikottai, Thalavady, Erode Dt, Tamil Nadu.

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VARIABLES OF THE STUDY

- **Independent variables:** Bates therapy.
- **Dependent variable:** Visual acuity of old age people residing in selected old age home.
- **Demographic variables:** age, gender, marital status, education, diet, past history of medical condition, watering of eye, visual disturbances, medications, spectacles usage in years, previous history of surgery has taken.

POPULATION

- **Target population:** old age people residing in home.
- **Accessible population:** Old people residing at Assissi Karuna Nilaya, Buthikottai, Thalavady, Erode Dt, Tamil Nadu.

SAMPLE AND SAMPLE SIZE

The total sample size consisted of 60 old age people selected from Assissi Karuna Nilaya, Buthikottai, Thalavady, Erode Dt, Tamil Nadu, out of which 30 samples were selected in the experimental group and 30 samples in control group.

SAMPLE TECHNIQUE

Purposive sampling technique was adopted for the study.

CRITERIA FOR SELECTING SAMPLE

Inclusion criteria

- Individuals aged 60 and above were selected for the study.
- The study includes old age people who have scored above 6/18 on the Snellen chart.
- The study comprises old age people who have given valid informed consent before the scale's administration.

Exclusion criteria

- The study excludes old age people with psychological illness.
- The study excludes old age people with spectacles from childhood.
- The study excludes unconscious and bedridden patients.

DESCRIPTION OF TOOLS

Section A: Demographic variables

The demographic variables taken for this study are age, gender, education, diet, watering of the eye, past h/o of a medical condition, visual disturbance, medication, using spectacles/ lens, duration of using spectacles, and h/o of eye surgery.

Section B: Visual Acuity Scale

Visual acuity refers to the angular measurement of clarity in an individual's vision concerning an object's size and distance. Impaired visual acuity poses challenges in daily activities. Assessing vision aids in detecting refractive errors, ocular diseases, and optical disorders. Evaluation includes measuring visual acuity before and after correcting refractive errors for both far and near distances in each eye.
Visual acuity, also known as VA, is assessed by having the individual recognize images or read letters displayed on a chart. High-contrast black letters or symbols on a white background aid in accurately gauging a patient's vision acuity. Common tests for recording visual acuity involve the Snellen chart

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and E-test. Assessments for acuity at close distances are also conducted. Typically, visual acuity distance is measured at either 6 meters or 20 feet, with mirrors and a reflective system employed to establish an appropriate testing distance when it's less than 20 feet.

SCORING AND INTERPRETATION

The scores of visual acuity scale are as follows:

Visual acuity	**Scores**					
	1	**2**	**3**	**4**	**5**	**6**
	6/36	6/24	6/18	6/12	6/9	6/6

The degree of visual acuity was categorized into four groups based on the percentage of scores. These classifications include severe impairment, moderate impairment, mild impairment, and normal vision.

Level of visual acuity	**Actual scores**	**Percentage of scores**
Severe impairment	1	<40%
Moderate impairment	3-2	41-60%
Mild impairment	4-5	61-80%
Normal vision	6	>81%

PROCEDURE FOR DATA COLLECTION

Data collection involves gathering the necessary information to tackle a research problem. The term "data" refers to systematically collected information during the course of a study.

Pre-test

On the first day pre-test was conducted for both groups through a visual functioning questionnaire and visual acuity scale to assess the level of visual problems among old age people. Participants were briefed about their confidentiality eligibility, voluntary participation, and withdrawal from the research study. And then they were asked to give informed consent for their participation. Basic Descriptive data comprised of age, gender, marital status, education, diet, past history of medical condition, watering of the eye, visual disturbances, medications, spectacles usage in years, and previous history of surgery was asked of the participants. An average of 10 – 15 number of old age people were assessed. The time of assessment was varied from 15 - 20 minutes. On the same day, Bates therapy was given to the experimental group for 15 to 20 minutes.

Implementation of Bates therapy

Immediately after the pre-test, the Bates therapy was given to the experimental group with visual problems residing in Assisi Karuna Nilaya, Buthikottai, Erode. The time period was 15 minutes, 2 times per day for 15 days.

Bates therapy

A series of exercises comprising stretching, blinking, swinging, palming or cupping, and sunning is prescribed for elderly individuals experiencing visual issues. This routine is to be performed for 15 minutes, two times a day, over a span of 15 days. The individual exercises are as follows:

- **Stretching:** Close the eyes tightly, then open them suddenly to feel the stretch. Arch your brows and stretch your face. Repeat this process for 5 minutes.

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- **Blinking:** Look as far as possible, inhale, then look down as far as possible and exhale. Blink your eyes more than ten times. Perform the same procedure by turning left and right, then diagonally from up-left to down-right, up-right to down-left, followed by rapid blinking for 5 minutes.
- **Swinging:** Rotate your eyes in all directions slowly and steadily, concentrating on one eye at a time. Repeat this more than 10 times and perform the same with your eyes closed for 5 minutes.
- **Palming and Cupping:** Sit with both feet squarely on the ground. Rub the palms of your hands together vigorously. Gently close your eyes and cover them with the rubbed palms, resting gently on the base of the eye socket with relaxed fingers. Ensure that your shoulders are relaxed on a table or chair back to release tension for 10 minutes.
- **Sunning:** Sunning involves using the sun's light for the eyes. Move your head from side to side for the heat to benefit the eyes. After a while, stretch your eyes to receive more sunlight for 5 minutes.

Evaluation of Bates therapy

The post-test was conducted for both groups (experimental group and control group) at the end of 15 days by using a visual acuity scale, to assess the level of visual problems among old age people. After the administration, participants was thanked for the cooperation and will be informed about the possibility to contact the researcher in case of any queries. After the collection of data, the researcher calculates the total score for each scale. To find the result of the research study statistical technique such as t test and correlation and descriptive statistics carried out through Microsoft Excel.

ORGANISATION OF THE DATA

Data collected were organized under the following sections.

- **Section A**: Frequency and percentage distribution of old age people residing in selected old age home at Erode District.
- **Section B**: Frequency and percentage distribution of pre and post-test score of visual acuity among old age people residing in selected old age home at Erode District.
- **Section C**: Determine the effectiveness of Bates therapy on visual acuity among old age people in experimental group and control group.
- **Section D**: Association between the pre-test level of visual acuity in experimental group with selected demographic variables among old age people.

SECTION - A: FREQUENCY AND PERCENTAGE DISTRIBUTION OF OLD AGE PEOPLE RESIDING IN SELECTED OLD AGE HOME AT ERODE DISTRICT.

The total number of participants (N) was 60 out of which the total number of experiment group(n) for the study was 30 and control group participants (n)was 30.

Table - 4.1 Frequency and percentage depicting demographical information of experimental group and control group (n = 60)

Sr.No.	Demographic variables	Experimental group (N= 30)		Control group (N=30)	
		Frequency	%	Frequency	%
	Age in years				
	60-65	9	30	15	50
	66-70	7	23	9	30
	71-75	5	17	3	10

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Sr.No.	Demographic variables	Experimental group (N= 30)		Control group (N=30)	
		Frequency	%	Frequency	%
	Above 75	9	30	3	10
	Gender				
	Male	2	7	15	50
	Female	28	93	15	50
	Marital Status				
	Married	12	40	17	57
	Unmarried	18	60	11	36
	Divorced	0	0	2	7
	Education				
	Primary	12	40	16	54
	Secondary	1	3	7	23
	Higher Secondary	17	57	7	23
	Diet				
	Non- vegetarian	25	83	21	70
	Vegetarian	5	17	9	30
	Watering of Eye				
	Watering	3	10	0	
	Dryness	8	27	21	70
	No watering	19	63	9	30
	Past H/O medical condition				
	Hypertension	15	50	17	57
	Diabetes	9	30	3	10
	Hypothyroidism	7	23	1	3.3
	Cardiac	3	10	2	6.6
	Asthma	3	10	1	3.3
	Glaucoma	1	3.3	0	0
	Hyperlipidaemia	2	6.6	0	0
	Hypocalcaemia	1	3.3	0	0
	Arthritis	1	3.3	0	0
	Gastritis	1	3.3	0	0
	Visual Disturbances				
	Blurring	12	40	14	47
	Presbyopia	6	20	2	6
	Myopia	12	40	14	47
	Medication				
	T.Amlodipine	4	13	5	16.6
	T.Cacium	4	13	0	0
	T,Metformin	7	23	2	6.6
	T.Rantac	2	6.6	0	0
	T.Metolar XR	1	3.3	0	0
	T.Aten	2	6.6	3	10
	T.Rosuvas	1	3.3	0	0

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Sr.No.	Demographic variables	Experimental group (N= 30)		Control group (N=30)	
		Frequency	%	Frequency	%
	T.Clopilet	1	3.3	0	0
	T.Thyronorm	5	16.6	1	3.3
	T.Clinidipine	2	6.6	4	13
	T.Deriphyllin	1	3.3	1	3.3
	T.Neurobion	2	6.6	0	0
	T.Telma40	0	0	0	0
	T.Dionil	1	3.3	3	10
	T.Glimipride	2	6.6	3	10
	T.Atorva	2	6.6	0	0
.	**Using spectacles/lens**				
	Yes	24	80	13	43
	No	6	20	17	57
.	**Duration of using spectacles (in years)**				
	Below 10	4	13	5	17
	11-20	13	44	8	27
	21-30	4	13	0	0
	Above 30	3	10	0	0
.	**H/o Eye Surgery**				
	Yes	20	67	2	7
	No	10	33	28	93

Table 4.1 reveals that the frequency and percentage depicting demographical information of experimental group and control group.

Regarding **Age in years,** in experimental group, the total number of participants between the age group of 60-65 is 9, between 66-70 is 7, between 71- 75 is 5, and above 75 is 9. The control group for the study, the total participants between the age group of 60-65 is 15, between 66-70 are 9, between 71-75 are 3, and above 75 are 3. Iin the experimental group most 30% of the participants for the study are 60-65 years and above 75 years and the rest are between the age group of 66-70 (23%) and 71-75 (17%). In the control group, most (50%) of the participants are 60-65 years and the rest are between 66-70 (30%), between 71-75 years, and above 75 yrs. are 10 % only.

Regarding **gender**, in the experimental group, 28 (93%) are females and 2 (7%) are males. In the control group out of 30, 15 (50%) are males and 15 (50%) are females.

With regards to **marital status**, in the experimental group, 12 (40%) are married and 18 (60%) are unmarried. In the Control group,17 (57%) are married,11 (36%) are unmarried and 2(7%) are divorced.

With regards to the **educational status**, in the experimental group,12 (40%) are primary,1(3%) are secondary, and 17(57%) are higher secondary. In the control group,16 (54%) are primary, 7 (23%) are secondary, and 7 (23%) are Higher secondary.

Regarding **diet**, in the experimental group, 25(83%) are non-vegetarian and 5 (17%) are vegetarian. In the control group, 21 (70%) are non-vegetarian and 9 (30%) are vegetarian.

Regarding **watering of the eyes**, in the experimental group, 3 (10%) have watering of the eyes, 19 (63%) have no watering and 8 (27%) have dryness of the eyes. In control group, 21 (70) have no watering of the eye and 9 (30%) have dryness of the eyes.

With regards to **h/o past medical condition**, in the experimental group, participants have hypertension

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15(50%), diabetic melitus 9 (30%), thyroid 7(23%), cardiac issues 3 (10%), hyperlipidemia 2(6.6%), hypocalcimia 1(3.3%), arthritis 1 (3.3%), gastritis 1 (3.3%), asthma 3 (10%). In control group, the participants have hypertension 17 (57%), diabetic 3(10%), thyroid problems 1 (3.3%), cardiac problems 2 (6.6%) asthma 1 (3.3%).

Regarding **visual disturbance**, in experimental group, myopia 12 (40%), presbyopia 6 (20%), blurring 12 (40%). In control group, myopia 14 (47%), presbyopia 2(6.6%), blurring 14(47%).

Regarding **usage of medication**, in the experimental group, T.amlodipine 4 (13%), T.Calcium 4 (13%), T.Metformin 7 (23%), T.Rantac 3 (10%), T.Deriphyllin 1 (3.3%), T.Clinidipine 2(6.6%),T,Aten 2(6.6%),T.Glymipride 2(6.6%),T.Atorva 1 (3.3%), T.Thyronorm 5 (16.6), T.cilacar1 (3.3%), T.Clopilet1 (3.3%), T.Nifidipi1 (3.3%), T.Dionil, 1 (3.3%), T.Lasilactone 1 (3.3%),. In control group HTN5 (16%), T.Metfomoin 2 (6.6%), T.Rantac 2 (6.6%), T.Deriphylline 1 (3.3%), T.Clinidipine 4 (13%), T.Aten 3 (10%), T.Thyronorm 1 (3.3%), T.Rosuvas 1 (3.3%), T.Thyronorm1(3.3%), T.Dionil 3 (10%).

Regarding **spectacles usage** in experimental group 24 (80%) using spectacles and 6 (20%), not using specs. In control group 13 (43%) using spectacles and 17 (57%) not using spectacles.

Regarding the **degree of duration of using spectacles**, in experimental group, 4 (13%) are using spectacles below 10 years. Between 11-20 years, 13(44%), range between 21-30 years 4(13%), above 30 .3(10%). In control group, 5 (17%) are using spectacles below 10 years, 8 (27%) using spectacles between 11-20 years.

Regarding **h/o eye surgery**, in the experimental group, 20(67%) have undergone cataract surgery, 10 (33%) have not done any surgery. In the control group, 2 (7%) has undergone cataract surgery and 28 (93%) have not undergone any surgery.

SECTION - B: FREQUENCY AND PERCENTAGE DISTRIBUTION OF PRE AND POST-TEST SCOREOF VISUAL ACUITY AMONG OLD AGE PEOPLE RESIDING IN SELECTED OLD AGE HOME AT ERODE DISTRICT.

Table - 4.2 Distribution of pre and post-test scores of visual acuity among old age people in the experimental group (n = 60)

Level of visual acuity	Pre-test score				Post-test score			
	Right eye		Left eye		Right eye		Left eye	
	F	%	F	%	F	%	F	%
Severe	13	43	10	33	7	23	6	20
Moderate	17	57	20	67	9	30	8	26
Mild	0	0	0	0	14	47	16	53
Normal	0	0	0	0	0	0	0	0

Table 4.2 shows the distribution of pre and post-test scores of visual acuity among old age people in the experimental group. In the pre-test, the frequency of the right eye was 13(43%) in the severe domain and moderate domain 17 (57%). In the pre-test, the frequency of the left eye was 10 (33%) in the severe domain and moderate domain 20 (67%). In the post-test the frequency of the right eye was 7 (23%) in the severe domain, moderate domain 9 (30%), and in mild domain 14(47%). In the post-test, the frequency of the left eye was 6 (20%) in the severe domain, the moderate domain 8 (26%), and in the mild domain was 16 (53%).

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Table - 4.3 Distribution of pre and post-test scores of visual acuity among old age people in the control group (n = 60)

Level of visual acuity	Pre-test score				Post test score			
	Right eye		Left eye		Right eye		Left eye	
	F	%	F	%	F	%	F	%
Severe	8	27	7	23	9	30	7	23
Moderate	22	73	14	47	14	47	14	47
Mild	0	0	9	9	7	23	8	27
Normal	0	0	0	0	0	0	0	0

Table 4.3 shows the distribution of pre and post-test scores of visual acuity among old age people in the control group. In the pre-test, the frequency of the right eye was 8 (27%) in the severe domain and moderate domain 22 (73%). In the pre-test the frequency of the left eye was 7 (23%) in the severe domain, in the moderate domain 14 (47%), and in the mild domain 9 (9%). In the post-test the frequency of the right eye was 9 (30%) in the severe domain, moderate domain 14 (47%), and in the mild domain 7 (23%). In the post-test, the frequency of the left eye was 7 (23%) in the severe domain, moderate domain 14 (47%), and mild domain was 8 (27%).

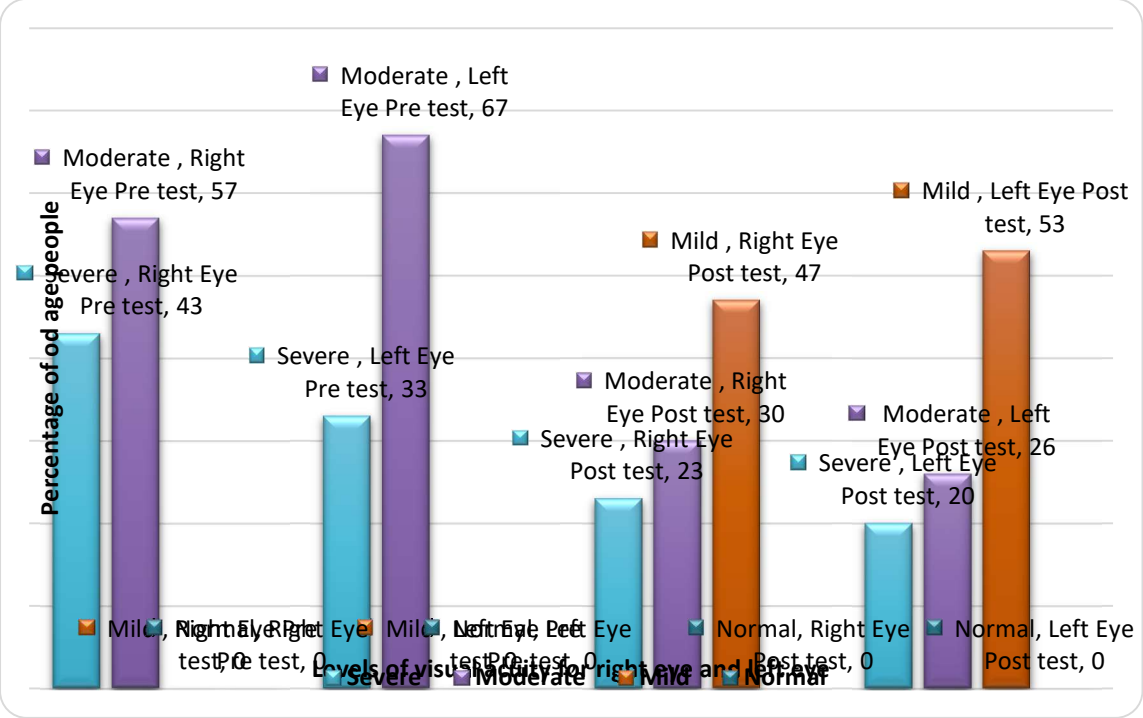

Fig. 4.13: Distribution of pre and post-test scores of visual acuity among old age people in the experimental group

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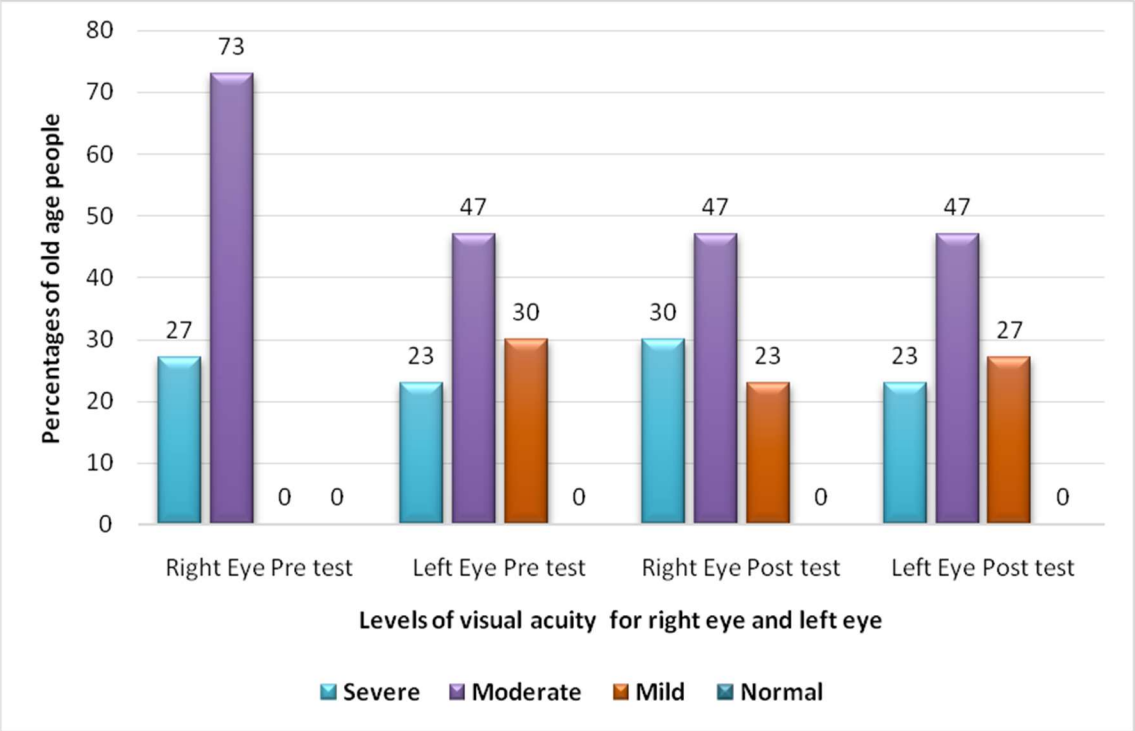

Fig. 4.14: Distribution of pre and post-test scores of visual acuity among old age people in the control group

SECTION-C: DETERMINE THE EFFECTIVENESS OF BATES THERAPY ON VISUAL ACUITY AMONG OLD AGE PEOPLE IN EXPERIMENTAL AND CONTROL GROUP

Table-4.4 Mean, SD, mean difference and paired 't-value' post-test of experimental and control group

Group	Eye	Mean Post test	SD Post test	Mean Difference	Paired 't-value'	DF	Effectiveness at P<0.05
Control group	Rt Eye Post-test	1.93	0.73	0.20	1.82	29	No
	Lt Eye Post-test	2.03	0.72	0.04	0.30	29	No
Experimental group	Rt Eye Post-test	2.23	0.80	0.67	5.47	29	yes
	Lt Eye Post-test	2.35	0.79	0.67	5.62	29	yes

Table value <0.05 level -2.045

This **Table 4.4** shows mean, SD, and mean difference, paired t value, degree of freedom and level of

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effectiveness at <0.05 level of significance. Paired t test was calculated to analyze the effectiveness between post-test of control group and experimental group. The paired t test for control group is 1.82 (Rt eye) and 0.30 (Lt eye). For experimental group it is 5.47 (Rt eye) and 5.62 (Lt eye), when compared to table value (2.045) it is high. It indicates Bates therapy is effective on visual acuity.

Table-4.5 Table depicting mean and SD of experimental and control group

Group	Eye	Mean	SD
Experimental Group	**Right Eye Pre-test**	1.57	0.50
	Right Eye Post-test	2.23	0.80
	Left Eye Pre-test	1.67	0.47
	Left Eye Post-test	2.33	0.79
Control Group	**Right Eye Pre-test**	1.73	0.44
	Right Eye Post-test	1.93	0.73
	Left Eye Pre-test	2.07	0.73
	Left Eye Post-test	2.03	0.72

The mean score in experimental group suggests an improvement in visual acuity from the pre-test to the post-test with higher mean score indicating a shift towards less severe visual acuity levels in both eyes. The SD in experimental group illustrates the variability in visual acuity scores within the experimental group for both pre-test and post-test conditions, indicating a shift towards less severe levels of visual acuity in the post test scores. The SD in the control group provides an approximation of the variability in visual acuity scores for both pre-test and post-test conditions, based on the assigned numerical scores for the severity levels of visual acuity.

MAJOR FINDINGS

Objective 1: The first objective of this study is to assess the level of visual acuity among old age people residing in Assisi Karuna Nilaya, Buthikottai, Erode (Dt.).

The visual acuity scale was used to assess the level of visual acuity among old age people residing in Assisi Karuna Nilaya, Buthikottai, Erode (Dt.). There were two groups in the study. Old age people in experimental group having visual problems such as myopia, presbyopia or any other visual disturbances received Bates therapy whereas the control group received no treatment.

Visual acuity, also known as VA, is assessed by having the individual recognize images or read letters displayed on a chart. High-contrast black letters or symbols on a white background aid in accurately gauging a patient's vision acuity. Common tests for recording visual acuity involve the Snellen chart and E-test. Assessments for acuity at close distances are also conducted. Typically, visual acuity distance is measured at either 6 meters or 20 feet, with mirrors and a reflective system employed to establish an appropriate testing distance when it's less than 20 feet.

In the **experimental group**, the pre-test percentage of the right eye was 43% in the severe domain and the percentage in the moderate domain was 57%. In the pre-test, the percentage of the left eye was 33% in the severe domain and the percentage in the moderate domain was 67%. In the post-test the percentage of the right eye was 23% in the severe domain, the moderate domain was 30%, and the mild domain was 47%. In the post-test, the percentage of the left eye was 20% in the severe domain, the moderate domain was 26%, and the mild domain was 53%.

In the **control group**, the pre-test percentage of the right eye was 27% in the severe domain, and in the moderate domain was 73%. In the pre-test,the percentage of the left eye was 23% in the severe domain, in the moderate domain was 47%, and in the mild domain was 9%. In the post-testthe percentage of the

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right eye was 30% in the severe domain, moderate domain 47%, and in the mild domain 23%. In the post-test,the percentage of the left eye was 23% in the severe domain, moderate domain 47%, and mild domain 27%. From this data, we can analyze the distribution of pre and post-test visual acuity among old age people in the experimental group and control group. These results indicate the efficacy of Bates therapy in reducing visual acuity issues among the elderly.

Objective 2: The second objective is to determine the effectiveness of Bates therapy on Visual acuity.

Immediately after the pre-test, the Bates therapy was given to the experimental group with visual problems residing in Assisi Karuna Nilaya, Buthikottai, Erode. The time period was 15 minutes, 2 times per day for 15 days.

Table 4.4: Shows the mean, SD, mean difference and paired 't-value' post-test of experimental and control group

Table 4.5: Shows the mean and SD of experimental and control group.

Paired t test was calculated to analyze the effectiveness between post-test of control group and experimental group. The paired t test for control group is 1.82 (Rt eye) and 0.30 (Lt eye). For experimental group it is 5.47 (Rt eye) and 5.62 (Lt eye), when compared to table value (2.045) it is high. It indicates Bates therapy is effective on visual acuity. The mean score in experimental group suggests an improvement in visual acuity from the pre-test to the post-test with higher mean score indicating a shift towards less severe visual acuity levels in both eyes. The SD in experimental group illustrates the variability in visual acuity scores within the experimental group for both pre-test and post-test conditions, indicating a shift towards less severe levels of visual acuity in the post test scores. The SD in the control group provides an approximation of the variability in visual acuity scores for both pre-test and post-test conditions, based on the assigned numerical scores for the severity levels of visual acuity.

Hence **research hypothesis (H_1)** stated that there will be significant differences between pre-test and post-test levels of visual acuity among people residing at Assissi Karuna Nilaya, Buthikottai, Thalavady, Erode Dt, Tamil Nadu in experimental group and control group is **accepted**.

Objective 3: The third objective is to find out the association between pre-test and post-test scores on visual acuity among people residing in Assissi Karuna Nilaya, Buthikottai, Erode.

Table 4.6 and Table 4.7 revealed about the association of effectiveness of Bates therapy on visual acuity with the selected demographic variables. Statistically there is three significant association between the pre-test level of visual acuity among selected old age people and their demographic variables. Watering of eye, duration of using spectacles and history of eye surgery have significant association with Right eye pre-test levels of visual acuity in experimental group. There is a significant association between the Left eye pre-test score of visual acuity and their significant demographical variables of Gender, Education, Watering of eye and duration of using spectacles in experimental group.

Hence **research hypothesis (H_3)** suggested that there will be a significant association between pre-test scores on visual acuity and their demographic variables among people residing at Assissi Karuna Nilaya, Buthikottai, Thalavady, Erode Dt, Tamil Nadu among experimental and control group is **accepted**.

CONCLUSION

The result of the study showed that there was a higher incidence of visual acuity among the old age people aged above 60 years. The present study was intended to assess the effectiveness of Bates therapy on visual acuity among old age people residing in selected old age home at Erode District. The report

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of this study found that Bates therapy was inexpensive and more effective in improving visual acuity.

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