

EFFECTIVENESS OF BATES THERAPY ON VISUAL ACUITY AND VISUAL FIELD PROBLEMS AMONG PEOPLE RESIDING IN SELECTED OLD AGE HOME, COIMBATORE.

Mr. Gopal Samy.M¹, Mrs. Reena. R.C.J² Dr.A.Jayasudha³,Mr.Baskaran⁴

¹Post Graduate, ²Associate Professor, ³Principial, ⁴Associate Professor

¹Department of Medical Surgical Nursing, ²Department of Fundamentals of Nursing, ³Principial,

⁴ Department of Psychiatric Nursing

P.S.G College Of Nursing Peelamedu,

Coimbatore - 641004, Tamil Nadu, India.

Abstract : The eye is the window of the human body through which it feels its way and enjoys the beauty of the world, but as age rises people develop visual problems by showing the symptoms like blurred vision, visual defect, fore sight and short sight, etc, which blocks the beauty of eye sight. The main objective of the study was to evaluate the effectiveness of Bates therapy on visual acuity and visual field problems among people residing in selected old age homes. A quasi experimental study was carried out in selected old age home, Coimbatore. 60 samples were selected by using consecutive sampling. Pre and post test assessment done by using visual acuity assessment scale and visual functioning scale to assess the visual problems. Interventions were given for 30 minutes, 2 times a day for 30 days. The post test was assessed after the intervention at 7th day, 15th day and 30th day respectively. The study findings revealed that , Paired 't' test value on visual acuity and visual field value is high when compared to the level of significant ($p < 0.05$) (95%). There is no significant association between pre test scores on visual acuity and visual field problems among people residing in selected old age home and their selected demographic variables. Therefore Bates therapy was very beneficial for people to regain their eyesight back. The study conclude that Bates therapy was significantly effective on visual acuity and visual field problems. As a part of nursing care service, Bates therapy can be implemented to the clients in the hospital and community settings.

IndexTerms - Effectiveness, Bates therapy, visual acuity, visual field.

INTRODUCTION:

“Glasses merely improve your vision not the eyes”

The human eye is an organ which reacts to light for several purposes. As a conscious sense organ, the mammalian eye allows vision. Rod and cone cells in the retina allow conscious light perception and vision including color differentiation and the perception of depth. The human eye has distinguished about 10 million colors.

Ageing is a journey or maturation or odyssey the process of ageing classically depicted as one of the constant and inexorable decline often reaching a peak of bodily function efficiency around the end of second decade of life. In India it is reported that at present there are 77 million elderly persons and the number is expected to be 177 million in the next two decades.

India is home to over to 76.6 million people over the age of 60. According to data available with the health ministry the country has 76,622,321 persons aged 60 years and above. By 2020, the world is expected to have around 1 billion senior citizens.

In 600 million world elderly population, 478 million are facing visual changes. In India, out of 77 million, 56 million are facing visual changes. In Tamilnadu, out of 5.5 million, 4.2 million are facing visual changes. so the majority of the old age population are facing visual changes according to the statistics given. (WHO, 2017).

Bates therapy is a time-tested solution for many functional vision problems since the 1890's. **Dr. William H Bates**, an ophthalmologist, stopped prescribing glasses to his clients after noticing that their eye problems, such as nearsightedness, farsightedness, astigmatism and lazy eye, got progressively worse after wearing the "eye crutches". He discovered that the glasses (eye crutches), actually prevents the eyes from healing itself naturally. Dr Bates had helped thousands of adults and children to perfect sight without the use of glasses.

Bates therapy is a natural vision correction method to improving nearsightedness (myopia), astigmatism, farsightedness (hyperopia), and presbyopia (old-age blur) without the use of glasses, lasik surgery, or medical aids. It helps in co-ordination problems and learning difficulties.

The significance of the investigator is to implement the Bates Therapy on elderly residents with visual problems. Bates Therapy is an eye exercise given to any kind of eye problems to improve good vision. So this eye exercise is very beneficial for old age to regain their eyesight back.

STATEMENT OF THE PROBLEM:

A Study to Assess the Effectiveness of Bates Therapy on Visual Acuity and Visual Field Problems among People Residing in Selected Old Age Homes, Coimbatore.

OBJECTIVES:

- To assess the level of visual acuity and visual field among people residing in selected old age homes
- To determine the effectiveness of Bates therapy on visual acuity and visual field among people residing in selected old age homes.
- To find out the association between pre test scores on visual acuity and visual field among people residing in selected old age homes and their selected demographic variables.

ASSUMPTIONS:

- Bates therapy may be an alternative way to improve , visual acuity and visual field problems among people residing in selected old age homes.

HYPOTHESIS:

H1: There will be a significant difference between the pretest and posttest level of visual acuity and visual field among people residing in selected old age homes.

H2: There will be a significant association between pre test scores on visual acuity and visual field problem among people residing in selected old age home and their selected demographic variables and clinical variables

MATERIALS AND METHODS

The study was conducted in St Joseph old age home, Coimbatore and the research method adopted was Quasi- experimental Time series design with multiple institution of treatment. As per the inclusion criteria, 60 samples were selected by consecutive sampling method. The tool consists of various sections dealing with demographic variables, clinical variables, visual acuity (Snellens chart) and visual field (Bjerrum screen). The reliability of the visual acuity scale was found to be 0.92 and visual field scale was 0.834. The tool was found to be highly reliable for the study. Demographic data and clinical variables collected through questionnaires method. Visual acuity and Visual field were assessed among people residing in St Joseph old age home using snellen's chart and Bjerrum screen. The pre test was conducted by using visual acuity assessment scale and visual field assessment scale, to assess the level of visual acuity, visual field among people residing in St Joseph old age homes. Immediately after pre test the Bates therapy for 30 minutes twice daily was given for 30 days. Followed by post test was conducted at the end of 7th, 15th, 30th day by using Visual acuity assessment scale and visual field assessment scale respectively. (Time-9.30-10.00AM) first group, (10.00-10.30AM) second group. EVE (4-4.30PM) first group, (4.30-5.00PM) second group.

RESULTS AND DISCUSSION

Table no: 4.1.1 Frequency and percentage distributions of demographic variables of people residing in selected old age home
n=60

S. No	Demographic variables	Frequency (f)	Percentage (%)
1	Age		
	40 to 50 yrs	5	8.3
	51 to 60 yrs	6	10
	61 to 70 yrs	31	51.67
	71 to 80 yrs	16	26.66
	81 to 90 yrs	2	3.33
2	Gender		
	Male	35	58.33
	Female	25	41.67
3	Marital status		
	Married	55	91.67
	Divorced	2	3.33
	separated	1	1.66
	single	2	3.33
4	Education		
	Primary	22	36.67
	Secondary	16	26.67
	UG	16	26.67
	PG	6	10
5	Income		
	sponser	2	3.33
	Dependent	58	96.67
6	Diet		
	Veg	14	23.33
	Non veg	46	76.67

The above table no; 4.1.1 reveals that among 60 research participants 5 (8.3%) were between the age group of 40 to 50 years, 6 (10%) between 51 to 60 years, 31 (51.67%) between 61 to 70 years, 16 (26.66%), between 71 to 80 years and 2 (3.33%) between 81 to 90 years. 35 (58.33%) were male and 25 (41.67%), were females. 55 (91.67%) were married, 2 (3.33%) were divorced, 1 (1.66%) were separated and 2 (3.33%) were single. 22 (36.67%) had primary education, 16 (26.67%) had secondary education, 16 (26.67%) had complete under graduate and 6 (10%) had complete post graduate. 58 (96.67%) are dependent and 2 (3.33%) are getting sponser. 46 (76.67%) were non vegetarian and 14 (23.33%) were vegetarian.

Table no 4.1.2 Frequency and percentage distribution of clinical variables of people residing in selected old age home.

n=60

S. No	Clinical variables	Frequency (f)	Percentage (%)
1	Past history		
	Diabetes	21	35
	Hypertension	21	35
	Both DM, HTN	3	5
	Arthritis	1	1.67
	Arthritis /HTN	3	5
	Asthuma/DM	2	3.33
	HIV	1	1.67
	Nil	9	15
2	Medication		
	Diabetes	21	35
	Hypertension	26	43.33
	Arthritis	1	1.67
	Ayurvedic	1	1.67
	B complex	1	1.67
	Shelcal	1	1.67
	ART	1	1.67
	Atrova	1	1.67
	No	7	11.67
3	Watering of eyes		
	Yes	37	61.667
	No	23	38.33
4	Specs usage		
	Less than 1 year	5	8.33
	1 to 10 yrs	31	51.67
	11 to 20 yrs	12	20
	20 to 30 yrs	2	3.33
	30-40yrs	2	3.33
Nil	8	13.33	
5	Disturbances		
	Myopia	13	21.67
	Hypermetropia	47	78.33
6	Specs purpose		
	Reading	41	68.33
	Headache	6	10
	Work	4	6.667
	Nil	9	15
7	Surgery		
	Cataract	17	28.33
	Glaucoma	8	13.33
	Nil	35	58.33

The above mentioned table 4.2.2 describes that among 60 research participants , 21(35%) were diabetes mellitus, 21(35%) were hypertension, 3(5%) were having both diabetes mellitus and hypertension, 1(1.67%) was with arthritis and 3(5%) were having both arthritis and hypertension, 2(3.33%) were having both asthma and diabetes mellitus, 1(1.67%) HIV. Regarding medication 26 (43.33%) research participants are taking anti hypertensive medication and 21(35%) taking diabetes medication, 1 (1.66%) person taking ART drug .About 37(61.66%) had complaints of watery of eyes. Regarding spec usage 31(51.67%) uses spec for about 1- 10 years, 8(13.33%) not using specs. Regarding visual disturbance 47(78.33%) having complaints of hyper metropia and about 13(21.67%) having complaints of myopia .41(68.33%) use specs for reading purpose. 17(28.33%) had undergone surgery for cataract and 8 (13.33%) had under gone surgery for glaucoma.

ASSESS THE LEVEL OF VISUAL ACUITY PROBLEMS AMONG PEOPLE RESIDING IN SELECTED OLD AGE HOME

Table 4.2.1: Frequency and percentage distribution of the pre and post test scores of visual acuity among people residing in selected old age home n=60

Category	Right(pretest)		Post test I (Day 7)		Post test II (Day 15)		Post test III (Day 30)	
	(f)	(%)	(f)	(%)	(f)	(%)	(f)	(%)
Very low visual acuity	20	33.33	10	6.1	1	1.66	-	-
Low Visual acuity	37	61.67	42	70	15	25	-	-
Moderate Visual acuity	2	3.33	7	11.66	40	66.66	16	26.66
Mild Visual acuity	1	1.667	1	1.66	4	6.66	40	66.66
Normal Visual acuity	-	-	-	-	-	-	4	6.66

Above table depicts that, in right eye 20(33.33%) of research participants had very low visual acuity, 37(61.67%) had low visual acuity, 2(3.33%) had moderate visual acuity and 1(1.66%) had mild visual acuity .before giving bates therapy

After the bates therapy, Post test I (Day 7) 10(6.1 %) Of research participants had very low visual acuity, 42(70 %) had low visual acuity, 7(11.66%) had moderate visual acuity and 1(1.66%) had mild visual acuity. Post test II (Day 15th) showing that 1(1.66%) had very low visual acuity, 15(25%) had low visual acuity, 40(66.66%) had moderate visual acuity and 4(6.66%) had mild visual acuity. Post test III (Day 30th) showing, 16(26.66%) had moderate visual acuity, 40(66.66%) had mild visual acuity and 4(6.66%) had normal visual acuity.

Table 4.2.2: Frequency and percentage distribution of the pre and post test scores of visual acuity among people residing in selected old age home n=60

Category	left(pretest)		Post test I (Day 7)		Post test II (Day 15)		Post test III (Day 30)	
	(f)	(%)	(f)	(%)	(f)	(%)	(f)	(%)
Very low visual acuity	5	8.33	4	6.66	-	-	-	-
Low Visual acuity	54	90	49	81.66	5	8.33	1	1.66
Moderate Visual acuity	1	1.66	6	10	53	88.33	10	16.66
Mild	-	-	1	1.66	2	3.33	49	81.66

Visual acuity								
Normal Visual acuity	-	-	-				-	-

Above table depicts that, in left eye 5(8.33%) of research participants had very low visual acuity, 54(90%) had low visual acuity, 1(1.66%) had moderate visual acuity before giving bates therapy

After the bates therapy, Post test I (Day 7) 4(6.66 %) Of research participants had very low visual acuity, 49(81.66 %) had low visual acuity, 6(10%) had moderate visual acuity and 1(1.66%) had mild visual acuity. Post test II (Day 15th) showing that 1(1.66%) had low visual acuity, 10(16.66%) had moderate visual acuity and 49(81.66%) had mild visual acuity. Post test III (Day 30th) showing, 1(1.66%) had low visual acuity, 10(16.66%) had moderate visual acuity, 49(81.66%) had mild visual acuity.

Table 4.2.3: Frequency and percentage distribution of the pre and post test scores of visual field among people residing in selected old age home n=60

Category	Right(pretest)		Post test I (Day 7)		Post test II (Day 15)		Post test III (Day 30)	
	(f)	(%)	(f)	(%)	(f)	(%)	(f)	(%)
Very low visual field	-	-	-	-	-	-	-	-
Low Visual field	-	-	-	-	-	-	-	-
Moderate Visual field	23	38.33	22	36.66	3	5	-	-
Mild Visual field	35	58.33	32	53.33	44	73.33	23	38.33
Normal Visual field	2	3.33	6	10	13	21.66	37	61.66

Above table depicts that, in right eye 23(38.33%) of research participants had moderate visual field, 35(58.33%) had mild visual field ,2(3.33%) had normal visual field before giving bates therapy

After the bates therapy, Post test I (Day 7) 22(36.66 %) Of research participants had moderate visual field, 32(53.33%) had mild visual field, 6(10%) had normal visual field. Post test II (Day 15th) showing that 3(5%) had moderate visual field, 44 (73.33%) had mild visual field, 13(21.66%) had normal visual field. Post test III (Day 30th) showing, 23(38.33%) had mild visual field, 37(61.66%) had normal visual field.

Table 4.2.4: Frequency and percentage distribution of the pre and post test scores of visual field among people residing in selected old age home n=60

Category	Left (pretest)		Post test I (Day 7)		Post test II (Day 15)		Post test III (Day 30)	
	(f)	(%)	(f)	(%)	(f)	(%)	(f)	(%)
Very low visual field	-	-	-	-	-	-	-	-
Low Visual field	-	-	-	-	-	-	-	-
Moderate Visual field	3	5	3	5	1	1.66	-	-
Mild Visual field	55	91.66	53	88.33	17	28.33	5	8.33
Normal Visual field	2	3.33	4	6.66	32	53.33	55	91.66

Above table depicts that, in left eye 3(5%) of research participants had moderate visual field, 55(91.66%) had mild visual field, 2(3.33%) had normal visual field before giving bates therapy

After the bates therapy, Post test I (Day 7) 3(5 %) Of research participants had moderate visual field, 53(88.33%) had mild visual field, 4(6.66%) had normal visual field. Post test II (Day 15th) showing that 1(1.66%) had moderate visual field, 17 (28.33%) had mild visual field, 32(53.33%) had normal visual field. Post test III (Day 30th) showing, 5(8.33%) had mild visual field, 55(91.66%) had normal visual field.

Table no 4.3.1 Comparison of level of visual acuity of right eye before and after bates therapy through paired ‘t’ test

H₀: There is no significant difference between the pretest and post test level of visual acuity and visual field problems among people residing in selected old age home.

(n=60)

Visual acuity of right eye	Test	Mean and Standard deviation	Calculated t value	Table value
	Pre test	1.7±0.61	4.434*	1.671
	Post test I	1.98±0.68		
	Post test II	2.78±0.58	23.869*	
	Post test III	3.40±0.62	22.552*	

Note: * -significant at the level of $p \leq 0.05$

The above mentioned table 4.3.1 states that the calculated mean and standard deviation values are (pre test, post test I, Post test II and Post test III) were 1.7±0.61, 1.98±0.68, 2.78±0.58 and 3.40±0.62 respectively. Then it resulted that there was a improvement in visual acuity .so this concluded that bates therapy was effective for improving visual acuity problems. The paired ‘t’ test value was

greater than the table value (1.671) at the level of significance $P < 0.05$. Therefore the null hypothesis is rejected. It is statically proven that there is significance difference between the pre test and post test values. Hence it has been concluded that bates therapy was effective. The research hypothesis is H_1 was accepted and null hypothesis H_0 was rejected.

Table no 4.3.2 Comparison of level of visual acuity of left eye before and after bates therapy through paired 't' test

H₀₁: There is no significant difference between the pretest and post test level of visual acuity and visual field problems among people residing in selected old age home (n=60)

Visual acuity of Left eye	Test	Mean and Standard deviation	Calculated t value	Table value
	Pre test	1.93±0.31	3.012*	1.671
	Post test I	2.07±0.48		
	Post test II	2.95±0.34	61.000*	
	Post test III	3.80±0.44	42.179*	

Note: * denotes- significant at the level of $p \leq 0.05$

The above mentioned table 4.3.2 states that the calculated mean and standard deviation values are (pre test, post test I, Post test II and Post test III) were 1.93±0.31, 2.07±0.48, 2.95±0.34 and 3.80±0.44 respectively. Then it resulted that there was a improvement in visual acuity. So this concluded that bates therapy was effective for improving visual acuity problems. The paired 't' test value was greater than the table value (1.671) at the level of significance $P < 0.05$. Therefore the null hypothesis is rejected. It is statically proven that there is significance difference between the pre test and post test values. Hence it has been concluded that bates therapy was effective. The research hypothesis is H_1 was accepted and null hypothesis H_0 was rejected.

Table no 4.3.3 Comparison of level of visual field of right eye before and after bates therapy through paired 't' test

H₀₁: There is no significant difference between the pretest and post test level of visual acuity and visual field problems among people residing in selected ld age home n=60

Visual field of Right eye	Test	Mean and Standard deviation	Calculated t value	Table value
	Pre test	3.65±0.55	2.316*	1.671
	Post test I	3.73±0.63		
	Post test II	4.17±0.44	7.941*	
	Post test III	4.62±0.49	29.000*	

Note: * denotes- significant at the level of $p \leq 0.05$

The above mentioned table 4.3.3 states that the calculated mean and standard deviation values are (pre test, post test I, Post test II and Post test III) were 3.65±0.55, 3.73±0.63, 4.17±0.44 and 4.62±0.49 respectively. Then it resulted that there was an improvement in visual field. So this concluded that bates therapy was effective for improving visual field problems. The paired 't' test value was greater than the table value (1.671) at the level of significance $P < 0.05$. Therefore the null hypothesis is rejected. It is statically proven

that there is significance difference between the pre test and post test values. Hence it has been concluded that bates therapy was effective. The research hypothesis is H_1 was accepted and null hypothesis H_0 was rejected

Table no 4.3.4 Comparison of level of visual field of left eye before and after bates therapy through paired 't' test
n=60

Visual field of Left eye	Test	Mean and Standard deviation	Calculated t value	Table value
	Pre test	3.98±0.29	1.426*	1.671
	Post test I	4.02±0.34		
	Post test II	4.27±0.48	4.829*	
	Post test III	4.92±0.28	23.191*	

Note: * denotes- significant at the level of $p \leq 0.05$

The above mentioned table 4.3.4 states that the calculated mean and standard deviation values are (pre test, post test I, Post test II and Post test III) were 3.98±0.29, 4.02±0.34, 4.27±0.48 and 4.92±0.28 respectively. Then it resulted that there was an improvement in visual field. So this concluded that bates therapy was effective for improving visual field problems. The paired 't' test value was greater than the table value (1.671) at the level of significance $P < 0.05$. Therefore the null hypothesis is rejected. It is statically proven that there is significance difference between the pre test and post test values. Hence it has been concluded that bates therapy was effective. The research hypothesis is H_1 was accepted and null hypothesis H_0 was rejected.

Table No: 4.4.1. Association between pre test level of visual acuity right and left eye and their variables

H_0 : There will be significant association between pretest level of visual acuity in right eye and their variables
n=60

Variables	Right eye		Left eye	
	χ^2 Value	Table value	χ^2 Value	Table value
Age	5.06	21.03	6.63	15.51
Gender	2.67	7.81	1.42	5.99
Marital status	5.98	16.92	58.73*	12.59
Education	8.64	16.92	18.59*	12.59
Income	14.28*	7.82	4.71	5.99
Diet	11.48*	7.82	4.82	5.99
Past history	26.47*	21.03	4.57	15.51
Medication	26.47*	21.03	4.57	15.51
Watering of eye	14.14	16.92	20.46*	12.59
Spec usage in year	24.92*	16.92	17.83	18.31
Visual disturbances	3.57*	7.81	1.31	5.99
Specs purpose	26.54*	11.67	32.24*	12.59
Surgery	7.62	12.59	1.72	9.49

Note:* significant at the level of $p < 0.05$

Table 4.4.1.depicts that the variables like income, diet, past history of medical condition, medication, spec usage in years, visual disturbance and specs purpose had significant association with the pre test level of visual acuity in right eye.

Variables like marital status, education, watery of eye and specs purpose had significant association with pretest level of visual acuity in left eye. Remaining variables had no association with the pre test level of visual acuity

Table No: 4.4.2. Association between pre test level of visual field right and left eye and their variables

H₀₂: There will be significant association between pretest level of visual field in right eye and their variables

n=60

Variables	Right eye		Left eye	
	χ^2 Value	Table value	χ^2 Value	Table value
Age	15.77*	15.51	11.25	15.51
Gender	3.65	5.99	0.98	5.99
Marital status	45.41*	12.59	33.36*	12.59
Education	46.89*	12.59	29.53*	12.59
Income	46.89*	5.99	23.79*	5.99
Diet	14.79*	5.99	7.08*	5.99
Past history	15.91*	15.51	11.25	15.51
Medication	20.20*	15.51	11.25	15.51
Watering of eye	20.20*	12.59	3.93	12.59
Spec usage in year	14.01*	18.31	12.89	18.31
Visual disturbances	1.63	5.99	4.91	5.99
Specs purpose	6.27	12.59	12.13	12.59
Surgery	13.45*	9.49	9.31	9.49

Note:* significant at the level of $p < 0.05$

Table 4.4.2.reveals that the variables like age, marital status, education, income, diet, past history of medical condition, medication, watering of eye, spec usage in years and previous history of surgery had significant association with the pre test level of visual field in right eye.

Variables like marital status, education, income and diet had significant association with the pretest level of visual field in left eye. Remaining variables had no association with the pre test level of visual field and their variables

Conclusion

The result of the study showed that there was higher incidence of visual acuity and visual field problems among above the age group of 40 years. The present study was intended to assess the effectiveness of Bates therapy on visual acuity and visual field problems among people residing in selected old age home, Coimbatore. The report of this study was found the Bates therapy was inexpensive and more effective in improving the visual acuity and visual field problem.

REFERENCES**BOOKS**

1. A.K. Khurana, (2018). *Ophthalmology*. 8th edition. New Age International, USA.
2. Brunner & Suddarths, (2004). *Text book of Medical and surgical Nursing*. 10th edition. Lippincott, New York,
3. Barbara Kozier et.al,(1999). *Fundamentals of Nursing Concepts ,Process and Practice*. 7thedition. J.B.Lippincott, Philadelphia

JOURNALS

1. Adler, P. (2018). Efficacy of treatment for convergence insufficiency using vision therapy. *Ophthalmic and Physiological Optics*, vol (22), Pp 565-571.
2. Coffey, B., Wick, B., Cotter, S., Scharre, J., & Horner, D. (1992). Treatment options in intermittent exotropia: a critical appraisal. *Optometry of Visual Science*. vol (69), Pp 386-404

NET REFERENCES

- www.pubmed.com
- www.msn.com
- www.medscape.co.in
- www.doctorgendron.com

