

CHAPTER I

INTRODUCTION

“The eye is the powerful light in our body.”

Ageing is the step-by-step process. It is common for all individuals in the course of their lifetime. Everyone can undergo the ageing process in their normal lifestyle. In the ageing process, many changes in morphological, physiological, and sociological aspects affect the elderly people's lifestyle.

Eyes are a powerful weapon in our body. It is the window of our soul. Eyes helped us to speak to our loved ones. The most attractive and expressive features of our face are the eyes. Our vision is one of those wonderful gifts of god's creatures in the world. Calendar denotes only the passing of time, but ageing denotes the reducing level of activity, and according to that response, it

The elderly represents the people in the age group of 60 years and above. More changes are occurring in the body that come because of ageing. Some of these changes lead to disability. One of these impairments is vision, which can affect the elderly to the extent of disabling and eventually prevent them from living an independent lifestyle

By **2011**, according to the Indian census, the old age population in India was 104 million elderly persons aged 60 years or above; 51 million males and 53 million females.

Both the share and size of the elderly population are increasing over time. From 5.6% in 1961, the proportion has increased to 8.6% in 2011. For males, it was marginally lower at 8.2%, while for females it was 9.0%. As regards rural and urban areas, 71% of the elderly population resides in rural areas, while 29 % reside in urban areas.

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

Table1.1: Data on projected visual problems among the elderly in 2020.

	Current Estimates (in millions)	2020 Projections (in millions)
Advanced Age-Related Macular Degeneration (With Associated Vision Loss)	1.8*	2.9
Glaucoma	2.2	3.3
Diabetic Retinopathy	4.1	7.2
Cataract	20.5	30.1

The **Health Ministry** of India is home to over 76.6 million people over the age of 60. The country has 76,622,321 persons aged 60 and above. With nearly 14 percent of the elderly population, Uttar Pradesh tops the chart with 11.6 million elderly. Maharashtra follows with 8.45 million senior citizens. West Bengal has 5.7 million, and Bihar and Tamil Nadu have 5.5 million senior citizens each. Delhi is home to 719,650 citizens above the age of 60.

In India, **2030**, 3.8% of the population comprises people above 15 years of age. It is expected that the elderly population will form 21.8% of the total population.

Vision function has multiple dimensions, including central vision (how far away and how clearly an individual can see), peripheral vision, or visual field (the scope of an

individual sight), colour vision, stereo vision, and contrast sensitivity. A visual problem refers to any loss or abnormality of visual functions. Vision loss among the elderly is a major health care problem. Approximately one in three has some form of vision-reducing eye disease by the age of 65. The most common causes of vision loss among the elderly are age-related macular degeneration, glaucoma, cataract, and diabetic retinopathy.

BACKGROUND AND SIGNIFICANCE OF THE STUDY

Globally, at present, 253 million people live with vision impairment, 36 million are blind, and 217 million have moderate to severe vision impairment. 81% of people who are blind or have moderate or severe vision impairment are aged 50 years and above. Chronic diseases are the main cause of vision loss. un-operated cataracts are the top two causes of vision impairment. Unoperated cataracts remain the leading cause of blindness in low- and middle-income countries. The prevalence of infectious eye diseases, such as trachoma, has significantly reduced over the last 25 years. Over 80% of all vision impairment can be prevented.

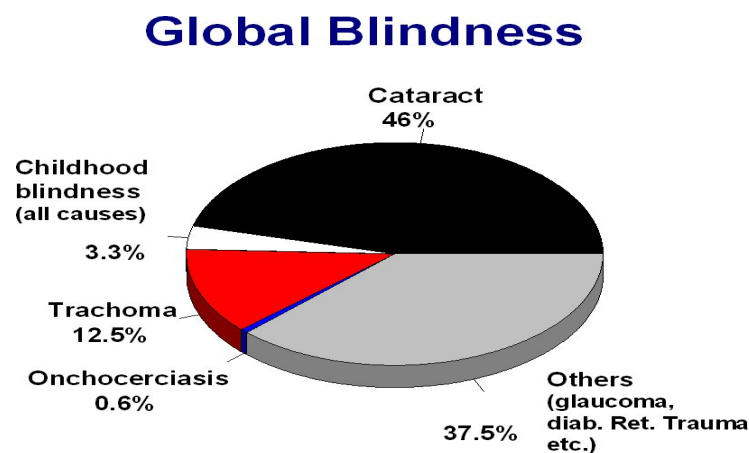


Figure 1.1: Prevalence of Global Blindness

According to **WHO (2020)**, Visual impairment and vision loss increase dramatically with age. Recent estimates state the major global causes of moderate to severe vision impairment are uncorrected refractive errors 53%, un-operated cataract 25%, age-related macular degeneration 4%, glaucoma 2%, diabetic retinopathy 1% and 81% of all people who are blind or have moderate to severe vision impairment are aged 50 years and above. With an increasing population of older people, more people will be at risk of vision impairment due to chronic eye diseases. It is projected that three-quarters of all deaths in developing countries could be ageing-related.

According to the **United Nations Children's Fund (UNICEF)**, life expectancy in India in 1970 was 49, in 1990, in 2000 it was 58,2005 it was 64 years. According to the world's life expectancy. According to Comason 2008, global life expectancy for some countries will be: India–68.6, United States of America–78, Australia–80.6, South Africa–42.5, China–72.9, Russia – 65.9, Saudi Arabia – 75.9, United Kingdom – 78.8 and France – 80.6.

According to **Mayo Clinic**, about half of all 65-year-old Americans have some degree of cataract formation in their eyes. As you enter your 70s, the percentage is even higher. It's estimated that by 2020, more than 30 million Americans will have cataracts.

According to the **National Eye Institute (NEI) (2020)**, macular degeneration affects more than 1.75 million people in the United States. The U.S population is aging rapidly, and this number will increase to almost three million. 10.2 million Americans over age 40 are known to have diabetes. Many experts believe that up to 30 percent of people who have diabetes have not yet been diagnosed. Among known diabetics over age 40, NEI estimates that 40 percent have some degree of diabetic retinopathy, and one of every 12 people with diabetes in this age group has advanced, vision-threatening retinopathy.

($p= 0.00$) in each case, respectively. The main causes of VI were uncorrected refractive errors, cataract, and glaucoma.

William Horatio Bates, M.D (1860–1931), an eye-care physician, stated that Bates therapy is an alternative therapy aimed at improving eyesight, attributed nearly all sight problems to habitual strain of the eyes, and felt that glasses were harmful and never necessary. Bates self-published a book as well as a magazine (and earlier collaborated with Bernarr Mac Fadden on a correspondence course) detailing the approach to helping people relax such strain and thus, claimed, improve their sight. His techniques centered on visualization and movement. He placed particular emphasis on imagining black letters and marks, and the movement of such. He also felt that exposing the eyes to sunlight would help alleviate the "strain".

Bates therapy is a natural vision correction method to improve nearsightedness (myopia), astigmatism, farsightedness (hyperopia), and presbyopia (old-age blur) without the use of glasses, Lasik surgery, or medical aids. It helps with coordination problems and learning difficulties. Bates therapy is a time-tested solution for many functional vision problems since the 1890s. **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 prevent the eyes from healing naturally. Dr. Bates had helped thousands of adults and children to perfect sight without the use of glasses.

NEED FOR THE STUDY

The world's elderly population aged 60 years and above is 600 million. In 600, the world's elderly population, 478 million, is facing visual changes. In India, out of 56 million are facing visual changes. In Tamil Nadu, out of 5.5 million, 4.2 million are facing visual changes. So, the majority of the old age population is facing visual changes, according to the statistics given.

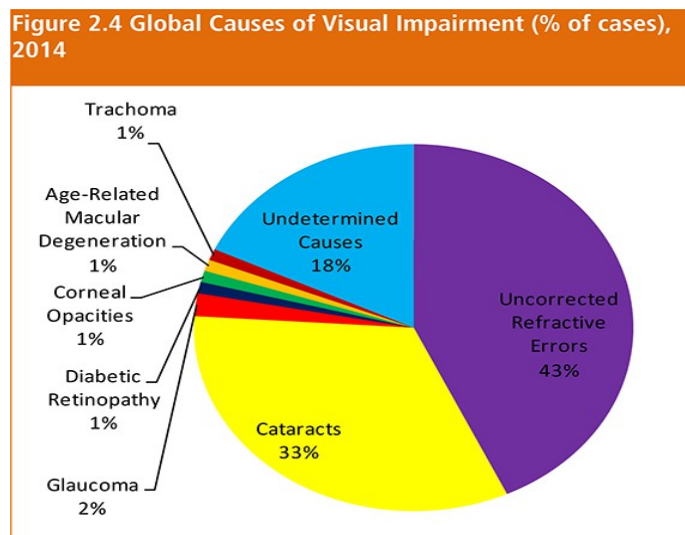


Figure1.2. Global Causes of Visual Impairment in 2014

By **American Foundation for the Blind (2001)**, an estimated 20% of legally blind individuals have clinically measured light perception or less, representing an estimated 260,000 individuals. The report stated that an estimated 20.5 million (17.2%) Americans 40 years and older have cataract in one or both eyes, and 6.1 million (5.1%) have had their lens removed operatively. The total number of people who have cataracts is estimated to increase to 30.1 million by the year of 2030.

By **American Academy of Ophthalmology (2021)**, reported that the number of people affected by age-related eye diseases - such as cataract, glaucoma, age-related macular degeneration, and diabetic retinopathy - is expected to dramatically increase from 28 million today to 43 million by 2020. In 2000, there were 937,000 blind people over age 40 in the United States. By 2020, the number of Americans over 40 affected by blindness will increase by 70 percent to 1.6 million. From 2000 to 2020, the number of Americans over age 40 affected by low vision will increase from 2.4 million to 3.9 million. By 2020,

5.5 percent of Americans over the age of 40 will suffer from blindness or low vision. Adult vision problems in the United States are costing the economy, patients, and their caregivers.

\$51.4 billion every year. Poor vision is costing Medicare \$2 billion per year in non-eye-related expenditures alone.

A case-control study was conducted of the medical students on eye exercises; the study aimed to find out the effect of eye exercises on visual acuity. This study was done on 60 medical students, divided equally into experimental and control groups. Study group subjects performed eye exercises regularly for eight weeks, while control group participants did not participate in this kind of exercise. Snellen's chart is used to assess visual acuity. The results showed that there was significant improvement in visual acuity in subjects practicing pranayama and eye exercises. Visual acuity values in the study group in the right eye before and after intervention were 34.30 ± 20.28 and 30.70 ± 21.89 , respectively.

Values in the left eye were 34.60 ± 20.08 and 30.46 ± 21.62 respectively. In control group the values were 32.60 ± 20.37 and 32.30 ± 20.44 for the right eye, respectively, and 31.10 ± 19.22 and 30.90 ± 19.15 for the left eye, respectively. The study suggested that eye exercises can be used as a potential non-pharmacological measure for visual acuity improvement.

STATEMENT OF THE PROBLEM

A Study to evaluate the effectiveness of Bates therapy on visual acuity among elderly people in selected old-age homes at Pudukkottai.

OBJECTIVES:

- ❖ To assess the pretest and posttest levels of visual acuity among elderly people in experimental and control groups.
- ❖ To evaluate the effectiveness of Bates therapy on visual acuity among elderly people in the experimental group.
- ❖ To find out the association between the post-test score on visual acuity among elderly people and their selected demographic variables in the experimental and control groups.

HYPOTHESES

H₁: There will be a significant difference in the pretest and posttest levels of visual acuity among elderly people in the experimental and control groups

H₂ There will be a significant association between the post-test scores on visual acuity among elderly people and their selected demographic variables in the experimental group and control group.

OPERATIONAL DEFINITIONS

Evaluate

It refers to the systematic process of measuring and analyzing the effectiveness of Bates therapy in improving visual acuity among elderly people residing in selected old-age homes.

Effectiveness

In this study, effectiveness refers to the difference in level of visual problems, as determined by a significant difference between the post-test scores of Bates therapy as measured by the visual acuity assessment scale.

Bates Therapy

It is a series of steps that includes Swinging, Palming or Cupping, and Sunning, given to the elderly people with visual problems for the duration of 30 minutes daily for 30 days.

Visual acuity

It is the measure of the ability of the eye to distinguish shapes and the details of objects at a given distance.

Visual problems

In this study, visual problems refer to cataract, near-sightedness, far-sightedness, double vision, dry eyes, eye discharge, watering of the eyes, eye pain, and blurred vision, which are tested by the visual acuity scale.

Elderly people

An elderly person refers to people in the age group of 60 years and above.

Old-age home

A residential facility with nursing and assisted living facilities designed for older adults.

ASSUMPTIONS

- Vision problems affect the activities of day-to-day living and the need for dependence in elderly people.
- Bates therapy has a greater impact on reducing the visual problem and relaxation.
- Elderly people require complementary therapy to maintain quality of life.

LIMITATIONS

The study was limited to,

- Elderly people.
- The study is based on the experimental and control groups
- Identify the changes in the visual problems.
- Selected old age home -a) Nesakkaram & b) DERMA old age home

CONCEPTUAL FRAMEWORK

A conceptual framework is a structured model linking study variables, guiding research design, and interpretation. It provides a clear structure, theoretical foundation, direction for research, and a framework for interpreting findings. This present study focuses on the effectiveness of Bates therapy in improving visual acuity among elderly people in an old-age home

The researcher adopted the modified Ludwig von Bertalanffy's General System Theory (GST) developed in the mid-20th century, which provides a universal framework for understanding complex, interacting systems. GST views the patient as an open system that continuously exchanges matter, energy, and information with the environment. Changes in one component of the system affect other components, highlighting the importance of holistic care.

In healthcare, GST is often used to explain how patient outcomes result from dynamic interactions between the patient, the nurse, and the environment. By using GST, nursing interventions can be seen as part of a continuous cycle aimed at promoting health and preventing complications. For the present study, GST serves as the conceptual backbone for evaluating the effectiveness of Bates therapy in improving visual acuity among the elderly in an old-age home.

This study focuses on

1. Input
2. Throughput
3. Output

1. Input

Input refers to resources, information, and conditions entering a system to initiate processes and achieve objectives. Here, the input includes the subjects' Age, Gender, Educational Status, Food habits, Personal habits, associated disease conditions, Duration of visual problem, use of spectacles/contact lenses, duration of use of spectacles, Frequency of eye checkup, and Previous history of eye surgery. The main aspect of input is the assessment of peripheral circulation, and both are open systems that interact with each other.

2. Throughput

Throughput refers to transformation processes where inputs are acted upon to produce meaningful and measurable changes. This study includes the performance of Bates therapy for the elderly in an old-age home

3. Output

Output refers to final products, results, or outcomes generated after processing inputs through the system's activities. In this study, it refers to the post-assessment of visual acuity and outcome of the system interaction, which is the effectiveness of Bates therapy in improving visual acuity

Figure 1.1 Modified Ludwig von Bertalanffy's General System Theory (GST),

INPUT

THROUGHPUT

OUTPUT

Demographic Variables

- Age
- Gender
- Educational Status
- Food habits
- Personal habits

Clinical Variable

- Associated disease condition
- Duration of visual problem
- Use of spectacles/contact lenses
- Duration of using spectacles
- Frequency of eye check-up
- Previous history of eye surgery

PRETEST

Assess the visual acuity for the experimental and control groups

Experimental Group

Performing Bates therapy

Control Group

No intervention

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Reassess the visual acuity for the experimental and control groups

Improvement of visual acuity in the experimental group

No Improvement of visual acuity in the experimental group

CHAPTER II

REVIEW OF LITERATURE

Review of Literature on Visual Acuity among Elderly People

Visual acuity decline in older adults is a well-recognised global health issue. Several studies have examined the prevalence, causes, and impact of visual impairment (VI) among the elderly population.

Varma, Mohanty, and Singh (2014) conducted a meta-analysis of population-based datasets collected globally between 1980 and 2015. Their objective was to estimate the prevalence of visual impairment and blindness among elderly individuals across countries and time periods. Hierarchical models were used to assess prevalence rates by age, country, and year, focusing on mild VI (visual acuity worse than 6/12 to 6/18), moderate to severe VI (worse than 6/18 to 3/60), and blindness (worse than 3/60). The study found that although the age-standardized prevalence of VI has been decreasing over time, demographic changes and population growth have resulted in a substantial increase in the number of elderly people affected. The authors concluded that despite reductions in prevalence, VI remains a significant global challenge among the elderly.

Gopinath, Liew, and Burlutsky (2016) aimed to determine the prospective association between age-related macular degeneration (AMD) and impaired activities of daily living (ADL) among older adults. This longitudinal study followed 761 participants aged 60 years and above over five years. AMD was diagnosed using retinal photographs, while ADL was assessed through the Older Americans Resources and Services ADL scale. After adjusting for confounders such as age, sex, health status, and lifestyle factors, the study reported that individuals with AMD were at a higher risk of developing functional disability. Specifically, those with any AMD had an increased likelihood of impaired ADL (OR 2.87), while those with late AMD had a markedly

higher risk (OR 12.95). The authors concluded that AMD independently predicts functional disability in the elderly, emphasizing the importance of early detection and management.

Bourne, Flaxman, and Braithwaite (2017) provided global estimates of vision impairment and presbyopia in 2015 with projections to 2020, 2040, and 2050. The study synthesized data from 1980 to 2015 and calculated uncertainty intervals for prevalence rates. Their analysis revealed that among the 7.33 billion global population in 2015, approximately 36 million people were blind, 216.6 million had moderate to severe VI, and 188 million had mild VI. Furthermore, functional presbyopia affected an estimated 667 million individuals aged 50 years and older. Despite a reduction in age-standardized prevalence rates, the absolute number of affected individuals increased due to population aging. The authors concluded that vision impairment will continue to impose a growing public health burden unless targeted interventions are implemented.

Gupta and Tandon (2019) examined the prevalence of VI among elderly individuals aged 60 years and above living in a resettlement colony of Delhi. A total of 604 participants were randomly selected, of whom 555 completed the study. Visual acuity was measured using Snellen's chart, while cataract diagnosis was done through direct ophthalmoscopy. Vision-related quality of life was assessed using the Indian Vision Function Questionnaire-33 (IND-VFQ-33). The study found a VI prevalence of 24.5%, with cataract (50.7%) and uncorrected refractive error (36.8%) being the major causes. Socio-demographic factors such as illiteracy, economic dependence, unemployment, and tobacco chewing were significantly associated with VI. The authors concluded that the burden of visual impairment in elderly populations remains high and is influenced by both medical and social factors.

Al-Namaeh (2022) conducted a review to explore the prevalence and causes of VI among elderly populations, drawing from randomized clinical trials and observational studies. The

National Eye Institute estimated that 25.66% of individuals aged 80 years and above experienced VI. The most common causes included cataracts, refractive errors, open-angle glaucoma, AMD, and diabetic retinopathy. The study highlighted that untreated visual conditions in the elderly significantly impaired quality of life, contributing to difficulties in ADL, social isolation, depression, and increased risk of falls and fractures. The author concluded that comprehensive screening and timely treatment are critical to preventing disability in older adults.

Singhand Mayurya (2022) investigated the prevalence of VI among older adults in India using data from the Longitudinal Ageing Study in India (LASI, Wave 1, 2017–2018). Bivariate and multivariate analyses were conducted to examine associations. The study reported that 34% of older adults had low vision (males 30%, females 38%), while 1.63% were blind. The findings further revealed that the prevalence of falls was significantly higher among those with VI, particularly among women. The authors concluded that VI is a preventable public health challenge that requires immediate attention in India's ageing population.

Cantoretal. (2024) conducted a meta-analysis of randomized controlled trials evaluating interventions for common causes of VI, such as refractive errors, cataracts, and AMD. The study reported that anti-VEGF therapy for wet AMD significantly improved visual outcomes compared to placebo, with a higher likelihood of achieving vision of 20/200 or better. However, evidence on the effectiveness of routine vision screening in primary care settings was inconclusive, showing no significant difference in outcomes between screened and unscreened groups. The authors concluded that while effective treatments exist for major causes of VI, screening strategies need further evaluation for their role in improving outcomes in elderly populations.

Review of Literature on the Effectiveness of Bates Therapy on Visual Acuity

Several studies have examined the effectiveness of Bates therapy in improving visual acuity among elderly individuals. Most of these studies used experimental or quasi-experimental designs and focused on visual acuity and visual functioning as primary outcomes.

Jaypee (2016) conducted a pre-experimental one-group pre-test and post-test study to evaluate the effect of Bates therapy on visual acuity among elderly individuals with decreased vision. Thirty participants were selected using purposive sampling. Visual acuity was assessed using the Snellen chart, and data were collected through structured interviews. Findings showed that in the pre-test, 26.6% had near-normal vision, 63.3% had moderate low vision, and 10% had severe low vision. After Bates therapy, 6.6% had normal vision, 30% had near-normal vision, and 63.3% retained moderate low vision. The p-value (0.001) indicated a highly significant improvement in visual acuity after therapy. The author concluded that Bates' therapy was effective in improving vision among the elderly.

Sheelavathi, Ganapathy, and Padmavathi (2016) carried out a pre-experimental study in an old age home in Erode, India, to assess the effectiveness of Bates therapy. A consecutive sampling technique was used, and pre- and post-test assessments were performed using the visual acuity assessment scale and the visual functioning scale. Results indicated significant improvement, with paired t-test values of 12.24 for visual acuity and 11.23 for visual functioning ($p < 0.05$). No significant association was found between post-test scores and demographic variables. The study concluded that Bates therapy is beneficial for elderly individuals in regaining visual function.

Baskaran (2019) evaluated the impact of Bates therapy on visual acuity and visual field problems among elderly individuals in selected old age homes in Coimbatore. A quasi-experimental design was employed with 60 participants selected through consecutive sampling.

Interventions were provided for 30 minutes, twice daily, for 30 days. Post-test assessments were conducted on the 7th, 15th, and 30th day. Results revealed significant improvements in both visual acuity and visual field, with paired t-test values showing high significance at the 95% confidence level ($p < 0.05$). The study concluded that Bates therapy was effective in enhancing both visual acuity and visual field functioning in elderly individuals.

Umamaheswari and Renuka (2021) used a pre-experimental one-group pre-test/post-test design to assess the effect of Bates therapy among 30 elderly participants with reduced visual acuity. The Snellen chart was used for vision assessment. Results demonstrated significant improvements in both right and left eyes. In the right eye, 26.6% had near-normal vision, 63.3% had moderate low vision, and 10% had severe low vision before intervention. After therapy, 6.6% achieved normal vision, 30% near-normal, and 63.3% remained moderate low vision. In the left eye, pre-test results showed 20% near-normal vision, 73.3% moderate low vision, and 6.6% severe low vision. Post-test results improved to 60% near-normal, 36.6% moderate low vision, and 3.3% severe low vision. The Wilcoxon signed-rank test values (2.828 for the right eye and 3.357 for the left eye) were statistically significant ($p < 0.001$). The study concluded that Bates therapy is highly effective in improving visual acuity in elderly individuals.

Vijayalakshmi, Suguna, and Poovaragavan (2023) conducted a quasi-experimental pre-test/post-test study in a hospital setting at Tiruvannamalai. Sixty patients with visual problems were selected, divided equally into experimental and control groups. Visual field assessment scales were used to measure outcomes. Results showed significant improvements in the experimental group after Bates therapy, with paired t-test values of 7.38 for the right eye and 9.59 for the left eye ($p < 0.001$). The authors concluded that Bates therapy exercises could serve as a safe and effective alternative therapy for elderly individuals with visual problems.

Journal of Medical International and Exercise Science (2024) published a randomized controlled study comparing conventional exercises alone with a combination of Bates therapy, ciliary muscle training, and conventional exercises. Thirty subjects with visual acuity problems were randomly allocated into two groups of 15 each. Group A received Bates therapy with ciliary muscle training in addition to conventional exercises, while Group B received only conventional exercises. Both groups were treated for six consecutive days per week over 12 weeks. Outcomes were measured using the Bailey-Lovie chart. Results showed significantly greater improvements in Group A compared to Group B, demonstrating that Bates therapy combined with other exercises is effective in improving visual acuity among individuals with myopia.

Sajeena, Mangalya, et al. (2025) conducted a pre-experimental study using a one-group pre-test/post-test design with 33 elderly participants suffering from visual impairments. Bates therapy was administered for 30 minutes daily over 26 days. Roy's Adaptation Theory was adopted as the conceptual framework. The study recorded 30 positive differences in the right eye and 29 in the left eye, with highly significant p-values ($p < 0.001$). The results indicated that Bates' therapy produced remarkable improvements in visual acuity in both eyes. The authors concluded that Bates therapy is a reliable intervention for managing visual acuity problems in the elderly.

Review of Literature on Elderly People in Old Age Homes:

Elderly people residing in institutional care often experience higher rates of visual impairment and related complications, which can significantly affect their daily functioning, mental health, and quality of life. Several studies have explored the prevalence, associated risk factors, and environmental influences on visual health among elderly individuals in old age homes.

Marmamula (2020) investigated the prevalence of falls and their association with visual impairment among elderly residents in homes for the aged in Hyderabad, India. The study recruited participants aged 60 years and above from 41 homes and conducted comprehensive eye examinations alongside interviews regarding personal details, systemic health, fear of falling, depression, and history of falls. A total of 1,074 participants were included, with a mean age of 74.4 years; 63.9% were women, 28.1% diabetic, and 56.9% hypertensive. Findings showed that the annual prevalence of falls was 29.1%. Multivariable analysis revealed that those with visual impairment had significantly higher odds of falls ($OR = 1.47$; $p = 0.043$), with uncorrected refractive errors being a major contributor. The study concluded that addressing visual impairment among institutionalized elderly populations could reduce falls and promote healthy ageing.

Falahaty, Cheong, and Isa (2020) examined factors associated with visual impairment and disability among residents of two welfare homes. A cross-sectional design was employed, and 150 subjects were randomly selected. Data collection included eye examinations using the Snellen chart, as well as activities of daily living (ADL) and instrumental activities of daily living (IADL) assessments. Statistical analyses using chi-square tests and multiple regression revealed that 46% of participants had visual impairment, 28% were blind, and only 26% had normal vision. Visually impaired elderly individuals experienced greater difficulties in both ADL and IADL compared to those with normal vision. The authors concluded that visual impairment plays a critical role in functional disability, underscoring the need for interventions to preserve independence in older adults.

Wang (2023) explored the role of indoor visual environments (IVE) in residential care homes and their influence on the visual-related physical health of elderly residents. The study collected 197 questionnaires from older adults living in care homes and analyzed subjective perceptions of

lighting, window design, corridor layout, furniture placement, and other IVE features. Using integrated statistical modelling, the study demonstrated that factors such as window views, corridor lighting, furniture positioning, and handrail design significantly influenced visual-related health outcomes, including visual acuity, physical discomfort, and injury risks. Recommendations included placing beds near windows with outdoor views, ensuring corridors had night lighting, using curtains with light sensors, and maintaining a minimum ambient lighting of 200 lux. The study concluded that well-designed indoor visual environments can enhance visual health and safety for elderly residents in institutional care.

Owsley (2025) conducted a large-scale study to evaluate habitual visual acuity, contrast sensitivity, spectacle use, and eye care utilization among elderly residents of 33 nursing homes in Birmingham, Alabama. Seventeen homes were selected as study sites. Inclusion criteria required participants to be 55 years or older, English-speaking, and to score at least 13 on the Mini-Mental State Examination. A total of 380 residents were enrolled. Results showed that 57% had distance visual acuity worse than 20/40 in their better eye, while 10% had visual acuity of 20/200 or worse, classifying them as legally blind. Near vision was generally worse than distance vision, and three-fourths of residents demonstrated abnormal binocular contrast sensitivity. Alarming, medical records revealed that 66% of participants had no documented eye examination, despite 90% having health insurance. The study concluded that visual impairment is highly prevalent among nursing home residents and that gaps in eye care utilization remain a major concern.

CHAPTER III

RESEARCH METHODOLOGY

Research methodology is the conceptual format within which the research is conducted. It is a blueprint for the collection, measurement, and analysis of data. In research methodology, researchers specify which specific design to use and how the samples were chosen.

Research methodology is a systematic way to solve the research problem and also to carry out the curriculum study and research in a perfect manner.

The current study was conducted to compare the effectiveness of Bates therapy on visual problems among elderly people in a selected setting.

This describes the aspects like research approach, research design, variables, setting, population, samples, sampling technique, criteria for sample selection, development and description of instruments, description of intervention tool, reliability and validity of the tools, ethical consideration, pilot study, data collection procedure, and plan for data analysis.

3.1 RESEARCH APPROACH

The research approach is the most essential part of any research. The entire study is based on it. The research approach used in the study is an applied form of research to find out how well the intervention is effective. In this study, the effectiveness of Bates therapy on visual problems among elderly people was evaluated. Therefore, a quantitative evaluation research approach was essential to test the effectiveness of the intervention for this study.

3.2 RESEARCH DESIGN

It is the whole plan of addressing a research question, including specifications for enhancing the integrity of the study.

The design used for the present study was a quasi-experimental research design where the pre- and post-test design was selected to evaluate the effectiveness of Bates therapy on visual problems among elderly people.

The design used here is a non-equivalent pretest and post-test control group design. One group is experimental, and the other group is considered the control group.

Diagrammatic presentation of the design is depicted in Table 3.1

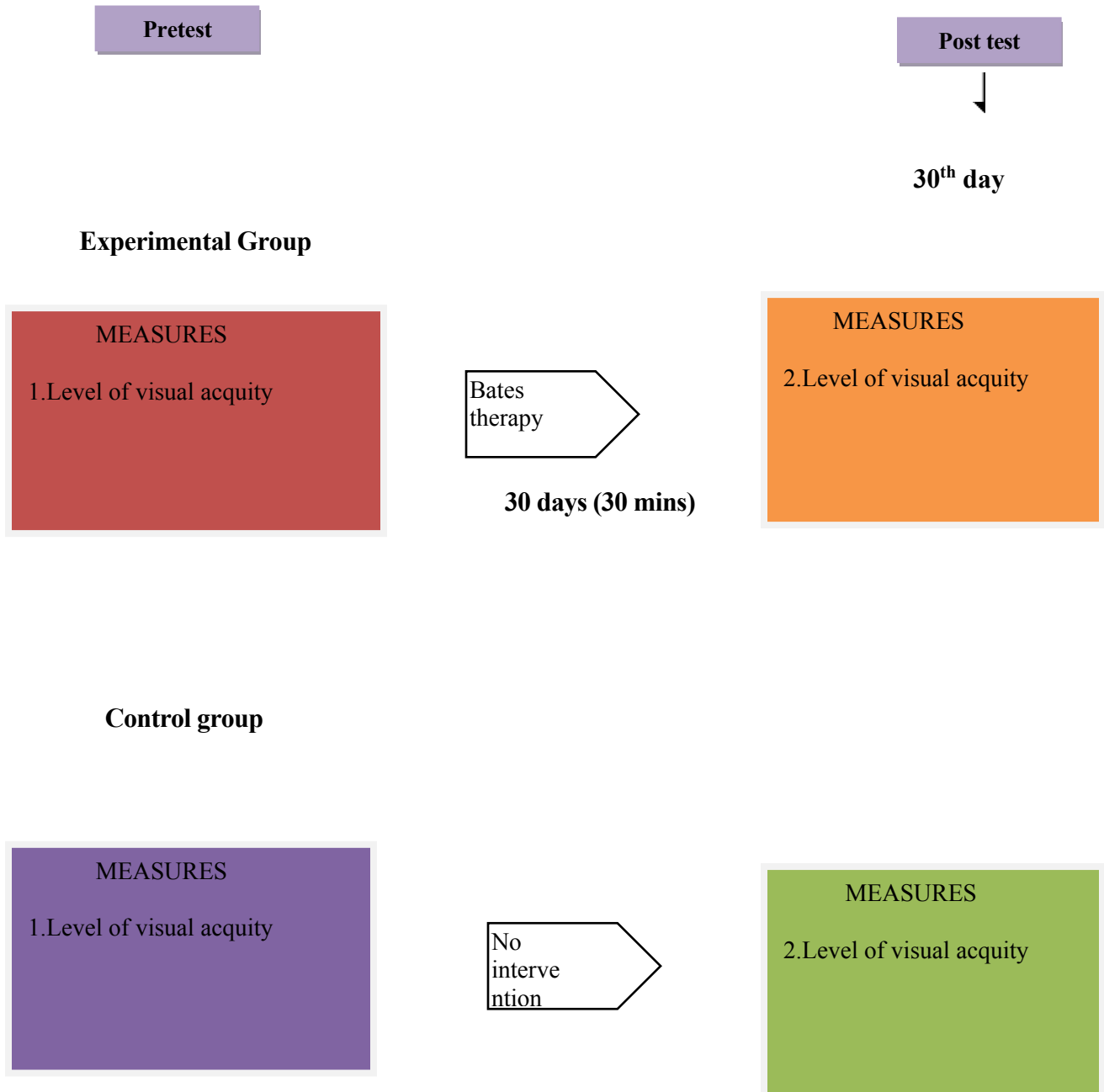
Conveniently selected Elderly people	Pre test	Treatment	Post test (3 weeks)
Experimental Group	O1	X	O2
Control Group	O1	-	O2

O₁: Pretest on elderly people regarding visual problems in the experimental group and control group.

X₁: Bates therapy

O₂: Post-test (after 30th day) on elderly people regarding visual problems in the experimental group and the control group.

Quasi-Experimental Design
Non-equivalent pre-test post-test control group design



3.3 SETTINGS OF THE STUDY

Research settings are specific places in research where data collection is to be done. The selection of the setting was done on the basis of the feasibility of conducting the study, the availability of subjects, and the permission of the authorities.

The setting chosen for the study was,

1. **Nesakaram** 80 Elderly people are living in the old age home. In this home, financial assistance is through donations and sponsors
2. **DERMA** is 15 km from the experimental group. 55 Elderly people are living in the old age home. In this home, financial assistance is through donations and sponsors.

The administration of both the old age homes is a single owner. The person residing will pay for their boarding and lodging expenses. Free services were provided for the very poor and orphans. The people in the old age home are helping with the regular maintenance, including the preparation of food.

3.4 VARIABLES FOR THE STUDY

Variables determine the characters that have more than one value. The categories of variables discussed in the present study were,

3.4.1 Independent Variable: Bates therapy

3.4.2 Dependent Variable: Visual problems among elderly people

3.4.3 Demographic Variables: It consists of demographic characteristics of elderly people, i.e., age, sex, education status, personal habits and food habits, associated disease conditions, duration of visual problems, using spectacles/lens, duration of using spectacles, duration of eye check-up, and previous history of eye surgery.

3.5 POPULATION

The population is an entire aggregation of subjects with similar characteristics, and on whom the researcher would generalize the study findings. The population consists of the target and accessible populations.

3.5.1 Target Population

The population the investigator had chosen for the present study was to make a generalization. The target population for the study was all elderly people with visual problems.

3.5.2 Accessible Population:

Refers to the aggregate of subjects with whom the designated criteria are conformed, and the accessible population was elderly people with visual problems who were living in Nesakaram and DERMA Old Age Home, at Pudukottai.

3.6 SAMPLE

A sample is the basic element of the population about which the information was collected, to represent the concept of interest. Elderly people with visual problems were selected from these two old age homes, which fulfilled the inclusion criteria were selected as the samples of the study.

3.6.1. SAMPLE SIZE

Each group from the experimental and control groups contains 30 samples. A total of 60 samples is needed for this study.

3.7 SAMPLING TECHNIQUE

The purposive sampling technique was adopted for the study.

Experimental group: The elderly people who are residing at Nesakkaram Old Age Home. A pre-test was done on the elderly people by using the visual acuity assessment scale. Elderly people score 3 or less, and then 3 will be taken for the study. The purposive sampling technique was used. Bates therapy intervention to be given for 30 days (30 minutes) for those selected elderly people. At the end of the 30th day, a test was done by using the visual acuity assessment scale.

Control group: The elderly people are residing at DERMA Old Age Home. A pre-test was done on the elderly people by using the visual acuity assessment scale. Elderly people who score 3 or less than 3 will be taken for the study. The purposive sampling technique was used. No intervention was given for the selected elderly people. At the end of the 30th day, a post-test was done by using the visual acuity assessment scale.

3.8. CRITERIA FOR SELECTION OF SAMPLE

3.8.1. Inclusion Criteria:

Elderly people,

1. Having visual problems with farsightedness.
2. Age group of 60 years and above.
3. Both genders.
4. Visual Acuity assessment scales core less than 3

Exclusion Criteria:

Elderly people.

1. Did eye exercise for 6 months before.
2. Bedridden during the time of data collection.
3. Having good visual acuity and vision

3.9. DATA COLLECTION INSTRUMENTS

A. DEVELOPMENT OF THE TOOL

The investigator used the following steps for the preparation of the tools for the study

- Extensive review of literature
 - Preparation of the blueprint for the tools
 - Consultation with experts from the field of study
 - Preparation of the final draft of the tools
 - Editing of the tools
-
- **Review of literature**

The investigator conducted an extensive review of related literature from books, journals, manuals, reports, published research, newspapers, and the internet to develop study instruments

- **Preparation of blueprint.**

The blueprint included a Questionnaire to collect Demographic data and a visual acuity assessment scale.

- **Consultation with experts from the field of study**

The tools were sent to a panel of experts comprising the fields of Medical Surgical Nursing, Community Health Nursing, ophthalmologists, and nursing research department experts.

- Preparation of the final draft
- Editing of the final tool

B. DESCRIPTION OF TOOLS:

There are three sections where tools were used. They are:

Section A: Demographic variables

Section B: Visual Acuity assessment scale.

3.9.1. Section A: Demographic variables

It consists of demographic characteristics of elderly people, i.e., age, sex, education status, personal habits and food habits, associated disease conditions, duration of visual problems, use of spectacles/lens, duration of using spectacles, duration of eye check-up, and history of eye surgery.

3.9.2. Section B: Visual Acuity Assessment Scale.

It is assessed by using Snellen's E chart for both eyes separately. The scores are as follows,

Table 3.2: Scores of visual acuity

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

Grades of visual acuity

1-2 = Severe

3-4= Moderate

5-6= Mild

3.10. BATES THERAPY (INTERVENTION)

The researcher used Bates therapy for the Experimental group for a period of 30 days (30 minutes) for each subject, but did not give an intervention to the Control group.

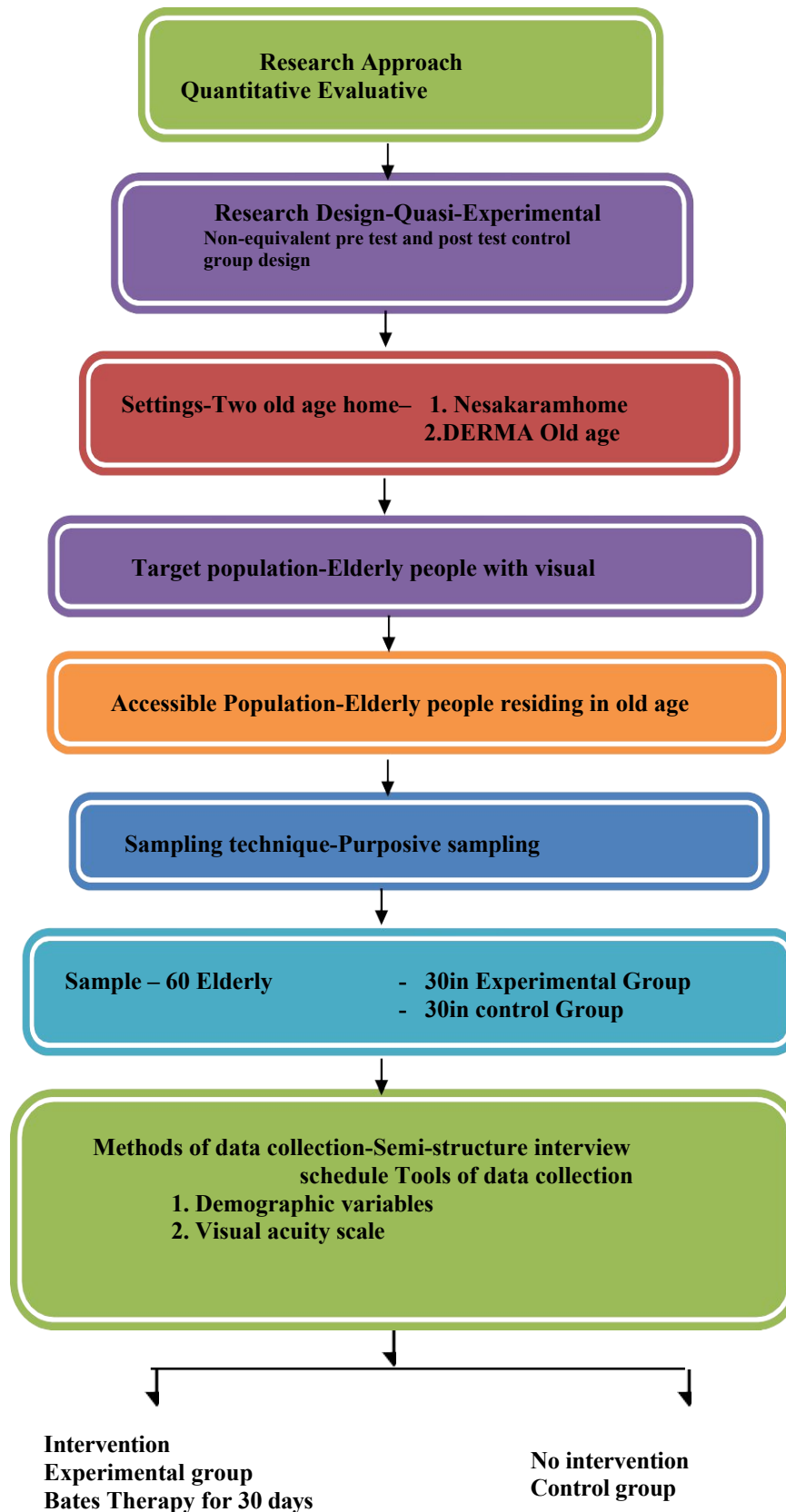


Figure3.2. Schematic representation of Research Methodology

3.11. VALIDITY OF THE TOOL

Content validity is the degree to which the items in the instruments adequately represent the content for the concept being measured.

The content validity of the demographic variables, Visual acuity assessment scale, was validated by the panel of experts comprising the fields of medical, Surgical Nursing, ophthalmologists, statisticians, and nursing research department experts. The expert's suggestions were incorporated in designing the final tool for the study in consultation with the Guide, Co-guide, Advisory Committee member, and Statistician for its appropriateness. The tool was modified according to the suggestions and recommendations of experts.

3.12. RELIABILITY OF THE TOOL:

Reliability is the degree of consistency with which an instrument measures what it is designed to measure.

The tools were translated into Tamil, and the reliability was tested. Internal consistency reliability was used.

3.13. ETHICAL CONSIDERATION

The investigator considered and followed the ethical principles preceding the investigation. The investigator adhered to the following actions in order to protect the ethical rights of the elderly people with visual problems.

1. Human Rights

- a. Ethical committee approval was received from the old-age home authority.
- b. Written consent was obtained from the old age home supervisor to conduct the study.
- c. Content validity was received from the various experts in the field of medical-surgical Nursing, Community Health Nursing, ophthalmologists, statisticians, and nursing research department experts.

2. Beneficence & non-maleficence

- a. The investigator trained the Bates eye exercises
- b. Potential benefits and risks were explained to both subjects.
- c. Informed consent was obtained from the subjects related to the study purpose, type of data, nature of commitments, participation, and procedure.
- d. A pilot study was executed to check the feasibility and time requirement of the study.
- e. Subjects' right to withdraw/withhold the information was ensured before data collection.
- f. Investigator contact information was disseminated to all the subjects who participated in the study.

3. Confidentiality

- a. Confidentiality and anonymity pledges were ensured.

4. Justice

- a. Babe treatment was given to all the subjects with general or moderate visual impairment.

3.14. PILOT STUDY

The investigator obtained formal consent from the old age home authority. The purpose of this study and confidentiality were explained to the elderly people. A pilot study was conducted from 1.04.25 -7.04.25. The investigator selected elderly people from K.K. Illam, as per the inclusion criteria, 10% of the total sample taken for the study. A pretest was done to assess the level of visual acuity of the elderly in the experimental and control groups. Elderly people score 3 less, and then 3 will be taken for the study. The purposive sampling technique was used. Bates therapy intervention to be given for 30 days (30 minutes) for those selected elderly people. Not given an intervention for the control group. At the end of the 30th day, a post-test was done by using the visual acuity assessment scale for both the experimental and control groups. It shows that the Bates therapy was effective among the elderly people in the old-age home. $r = 0.7$. The result of the pilot study revealed that the tool was reliable and the study was feasible.

3.15. METHOD OF DATA COLLECTION

Data collection for the main study was done from the month of May 2025. The data is collected from elderly people having visual problems in the experimental group and the control group, after permission was obtained from Nesakkaram and the DERMA old age home authority. The investigator explained the purpose of the study to the elderly people and assured them.

They are concerned about the confidentiality of their information. The investigator selected elderly people (30 elderly people in the experimental group and 30 elderly people in the control group) who fulfilled the inclusion criteria by purposive sampling techniques. The subjects were informed regarding the purpose and usefulness of the study. The investigator assured the subjects of anonymity and confidentiality. Written consent was taken from each subject. The data collection for each subject began with the introduction of the investigator after confirming the subjects. The samples were made to sit comfortably in a well-ventilated place. After the brief introduction about the purpose of the study for the elderly people, a demographic profile was collected. The technique used for the data collection was a semi-structured interview schedule.

Pretest

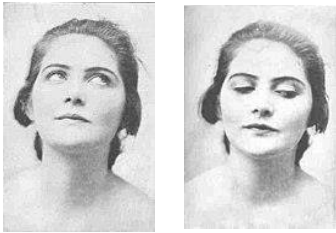
After obtaining the written consent from the elderly people, a pre-test was conducted on visual problems among elderly people in the experimental group and control group by using demographic variables, and the visual acuity assessment scale.

Implementation of Bates therapy (Experimental group)

Bates Therapy

It is a series of steps that includes Swinging, Palming or Cupping, and Sunning, given to both the eyes of elderly people with visual problems for the duration of 30 minutes daily for 30 days.

1. Swinging



Sit on the chair. Rotate your eyes inwards, upward, downward, slowly and steadily, concentrating on each eye at a time. Do these exercises with your eyes closed for 10 minutes.

2. Sunning



Get the sun's light for your eyes. It is in the chair with eyes closed. Move your head from side to side for 20 seconds for the heat to benefit the eyes. After a while, try stretching the eyelids to allow more light into your eyes for

3. Palming or cupping

10 minutes.

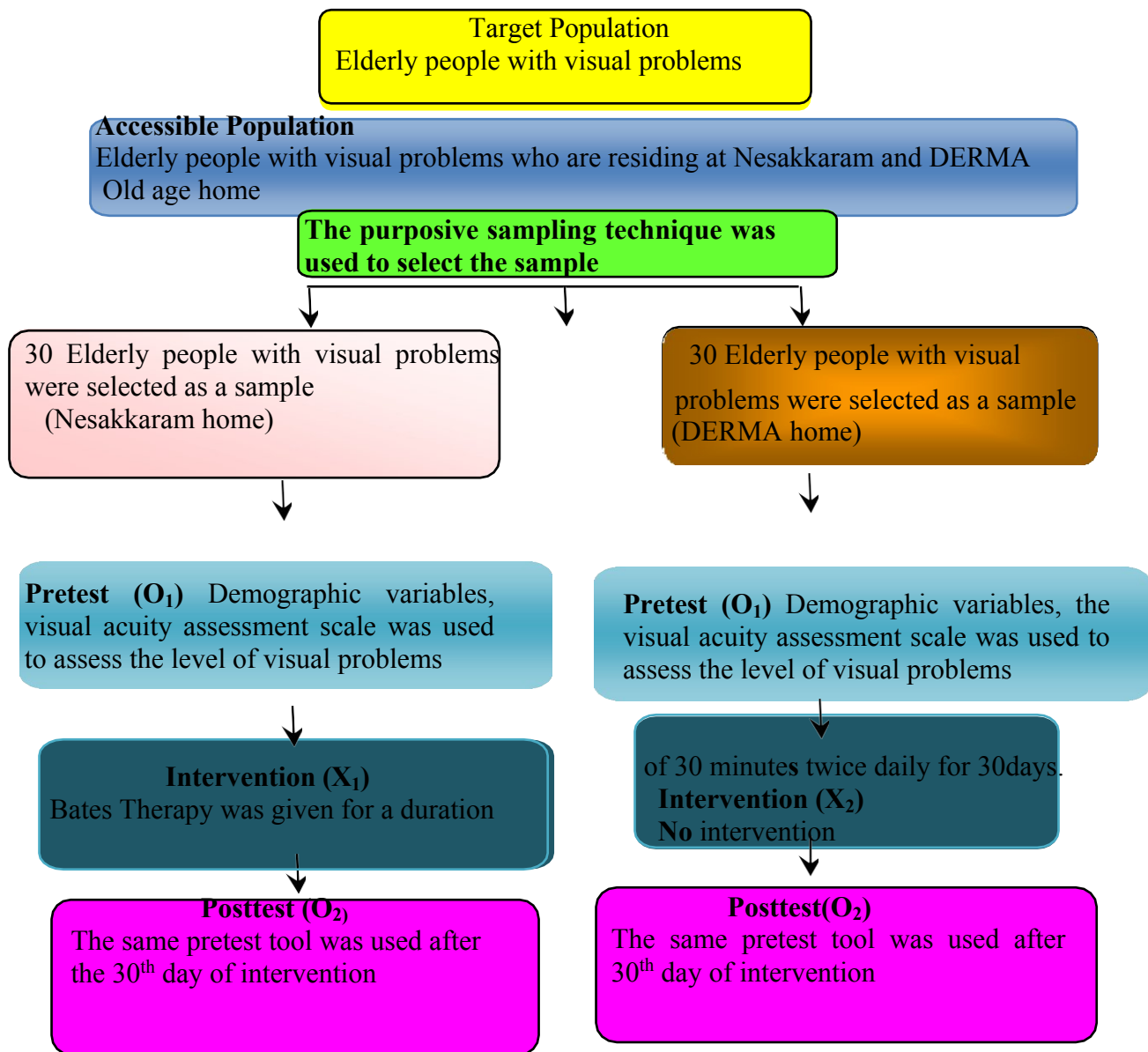


Sit on the chair. Rub the palms of your hands together vigorously. Gently close your eyes. Cover eyes with cupped palms. Have the base of your palms gently resting on the base of the eye socket. Keep fingers

relaxed. Imagine color; notice the depth of the color. Ensure that your shoulders are relaxed on a table or chair back to release the tension for 10 minutes.

Posttest

Post-test was conducted on the 30th day, among all elderly people in the experimental group and control group by using demographic variables and the visual acuity assessment scale.



3.8 DATA ANALYSIS PROCEDURE

The data was collected from 60 Elderly people with visual problems were coded and entered into a Microsoft Excel Spreadsheet. The data was analyzed using descriptive and inferential statistics.

Descriptive Statistics

- Frequency and percentage distribution to analyze the demographic variables.
- Mean, Standard deviation, and Mean percentage were used to assess the level of elderly people with visual problems

Inferential Statistics

- An unpaired test was used to compare the pre- and post-intervention levels of visual acuity among elderly people in the experimental group and control group.
- An unpaired test was used to compare the post-test intervention level of visual acuity among elderly people in the experimental group and control group.
- Correlation coefficient was used to compare the relationship between visual acuity.
- Chi-square test was used to associate the posttest level of visual acuity among elderly people with selected demographic variables.

SUMMARY

A quasi-experimental design was carried out on 60 elderly people with visual problems residing in Nesakkaram and DERMA Old Age Home, by using a convenience sampling technique. The Visual Acuity Assessment scale was used to assess the visual problems among elderly people. The data was collected after obtaining permission from the concerned old-age home authority. Analysis was planned to be done by using descriptive and inferential statistics and to be presented in the form of tables, graphs, and figures.

CHAPTER IV

DATA ANALYSIS AND INTERPRETATION

This chapter deals with the analysis and interpretation of data collected from the elderly people, to evaluate the effectiveness of Bates therapy to improve vision among elderly people at the old-age home, Pudukkottai.

The collected data was tabulated, organized, and analysed by using descriptive and inferential statistical analysis, which are presented under the following section.

SECTION I

A) Description of demographic variables of elderly people with visual problems regarding the effectiveness of Bates therapy to improve visual acuity among elderly people in both the experimental and control groups at the old age home, Pudukkottai.

SECTION II

A) Distribution of elderly people according to pre-test score on the level of visual acuity in the experimental and control groups.

B) Mean, standard deviation, and mean difference on pre-test level of visual acuity among elderly people in the experimental and control groups.

SECTION III

A) Distribution of elderly people according to post-test score on the level of visual acuity in the experimental and control groups

- B) Mean standard deviation and mean difference on post-test level of visual acuity among elderly people in the experimental and control groups.

SECTION IV

- A) Effectiveness of Bates therapy on the level of visual acuity in experimental and control groups

SECTION V

- A) Association of selected demographic variables with post-test score regarding visual acuity among elderly people with visual problems in the experimental and control groups.

SECTION I

Table I

A) Description of demographic variables of elderly people with visual problems regarding the effectiveness of Bates therapy to improve visual acuity among elderly people in both the experimental and control groups at the old age home, Pudukkottai.

DEMOGRAPHIC VARIABLES	EXPERIMENTAL GROUP		CONTROL GROUP	
	F	%	F	%
1. AGE				
a) 60 -65 years	12	40%	13	43.33%
b) 66 -70 years	8	26.66%	8	26.66%
c) 71 – 75 years	9	30%	6	20%
d) Above 76 years	1	3.33%	3	10%
2. GENDER				
a) Male	16	53.33%	17	56.66%
b) Female	14	46.66%	13	43.33%
c) Transgender	0	0	0	0
3. EDUCATIONAL STATUS				
a) No formal education	12	40%	11	36.66%
b) Primary education	10	33.33%	12	40%
c) Higher secondary	8	26.6%	6	20%
d) Graduates	0	0	1	3.33%
4. FOOD HABITS				
a) Vegetarian	20	66.66%	7	23.33%
b) Non – vegetarian	10	33.33%	23	76.66%
5. PERSONAL HABITS				
a) Smoking	11	36.66%	13	43.33%
b) Alcohol	9	30%	9	30%
c) Chewing tobacco	10	33.33%	8	26.66%
d) Any other	0	0	0	0
CLINICAL VARIABLES				
1. ASSOCIATED DISEASE CONDITION				
a) Diabetes mellitus	14	46.66%	20	66.66%

b) Hypertension	16	53.33%	10	33.33%
c) Neurological disease	0	0	0	0
d) Any other	0	0	0	0
2. DURATION OF VISUAL PROBLEM				
a) Below 6 months	9	30%	19	63.33%
b) 6 months – 1 year	9	30%	8	26.66%
c) 2 – 5 years	7	23.33%	3	10%
d) Above 5 years	3	10%	0	0
3. USE OF SPECTACLES / CONTACT LENS				
a) Yes	26	86.66%	21	70%
b) No	4	13.33%	9	30%
4. DURATION OF USING SPECTACLES				
a) Below 6 months	10	33.33%	7	23.33%
b) 6 month – 1 year	9	30%	8	26.66%
c) 1 -2 years	2	6.66%	7	23.33%
d) Above 2 years	9	30%	8	26.66%
5. FREQUENCY OF EYE CHECKUPS				
a) Once a year	9	30%	12	40%
b) Once or twice a year	9	30%	7	23.33%
c) When needed	10	33.33%	7	23.33%
d) Not at all	2	6.66%	0	0
6. PREVIOUS HISTORY OF EYE SURGERY				
a) Cataract	17	56.66%	21	70%
b) Glaucoma	11	36.66%	6	20%
c) Retinal detachment	2	6.66%	3	10%
d) Any other	0	0	0	0

Table I: Description of demographic variables of elderly people with visual acuity problems in both the Experimental and Control groups.

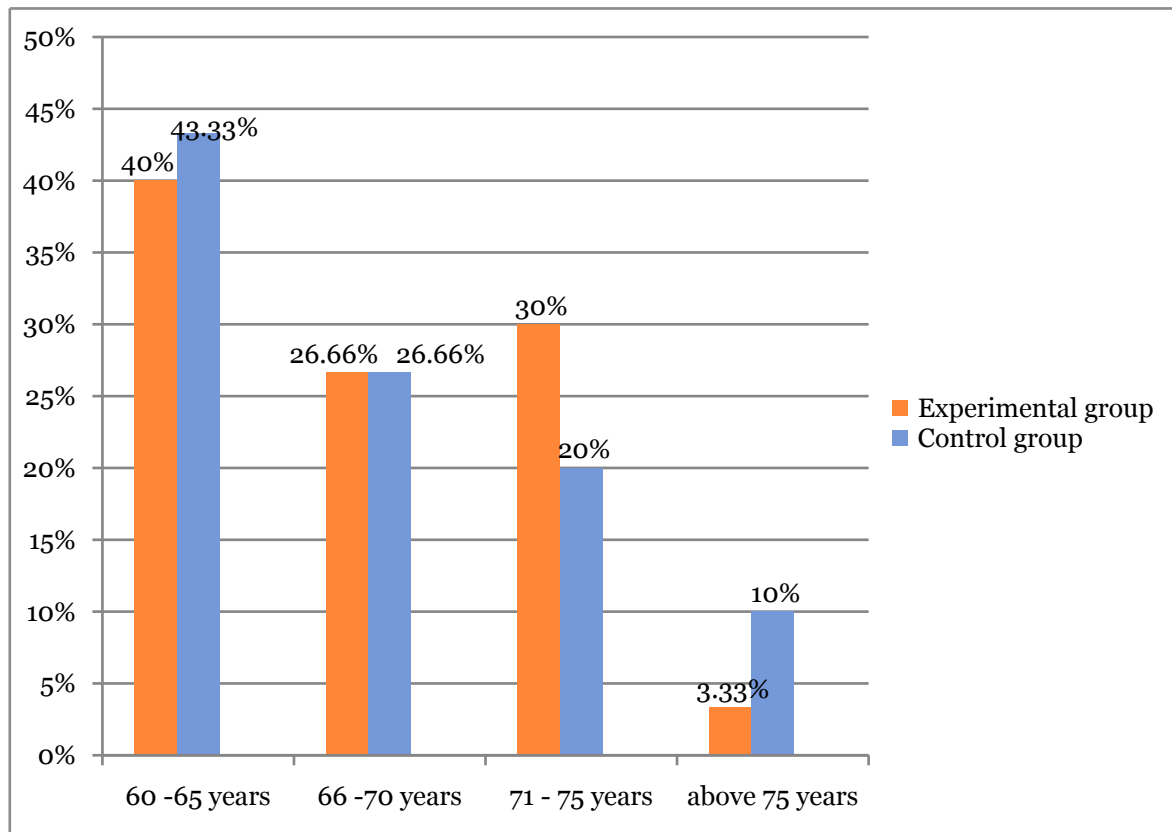


Figure 4.1: Percentage distribution of elderly people according to their age

The above figure shows that the majority, 12 (40%) of elderly people were in the age group of 60-65 years in the experimental group, and in the control group, the majority, 13 (43.33%) of elderly people were between the ages of 60-65 years.

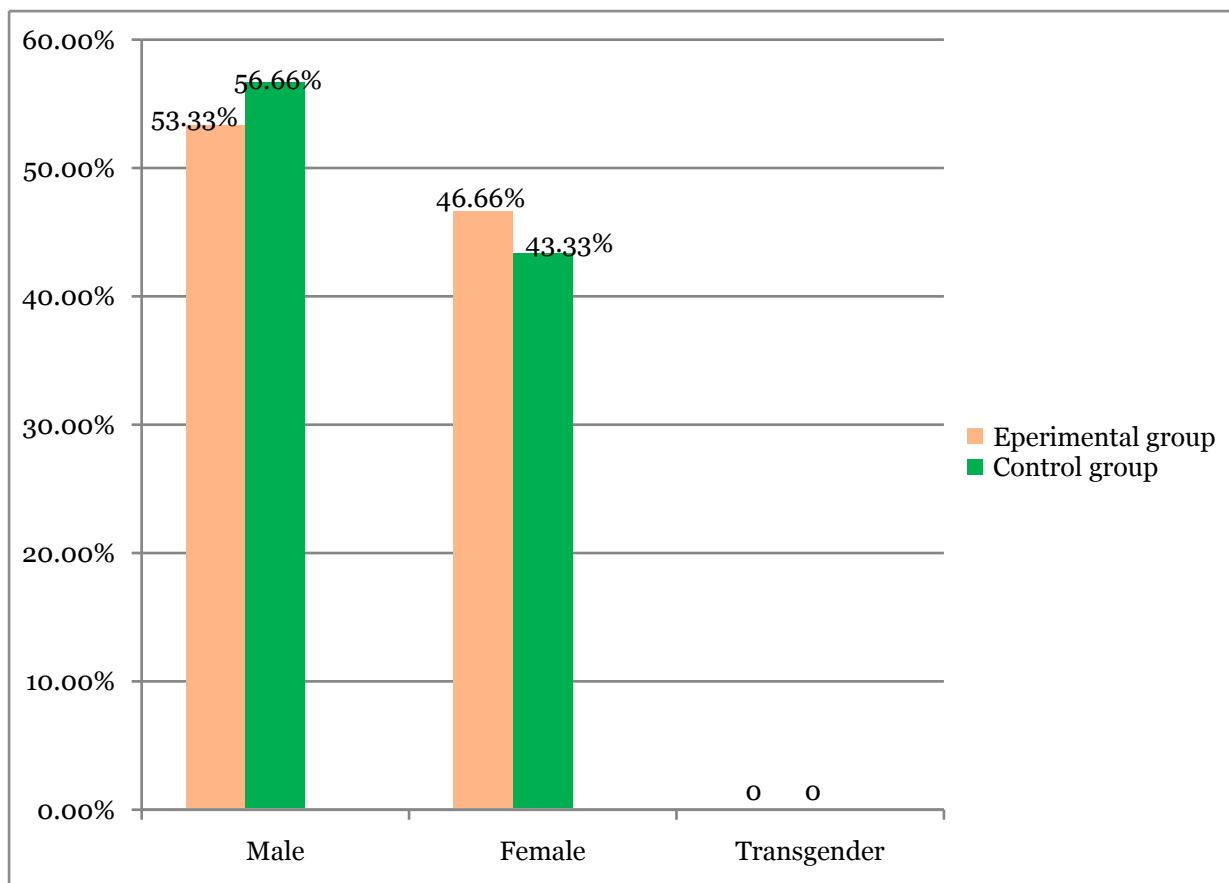


Figure 4.2: Percentage distribution of elderly people according to their gender in both the Experimental and control groups

The above figure shows that in the experimental group, the majority, 16 (53.33 %) of elderly people were male gender, and in the control group, 17 (56.66%) of elderly people were male gender.

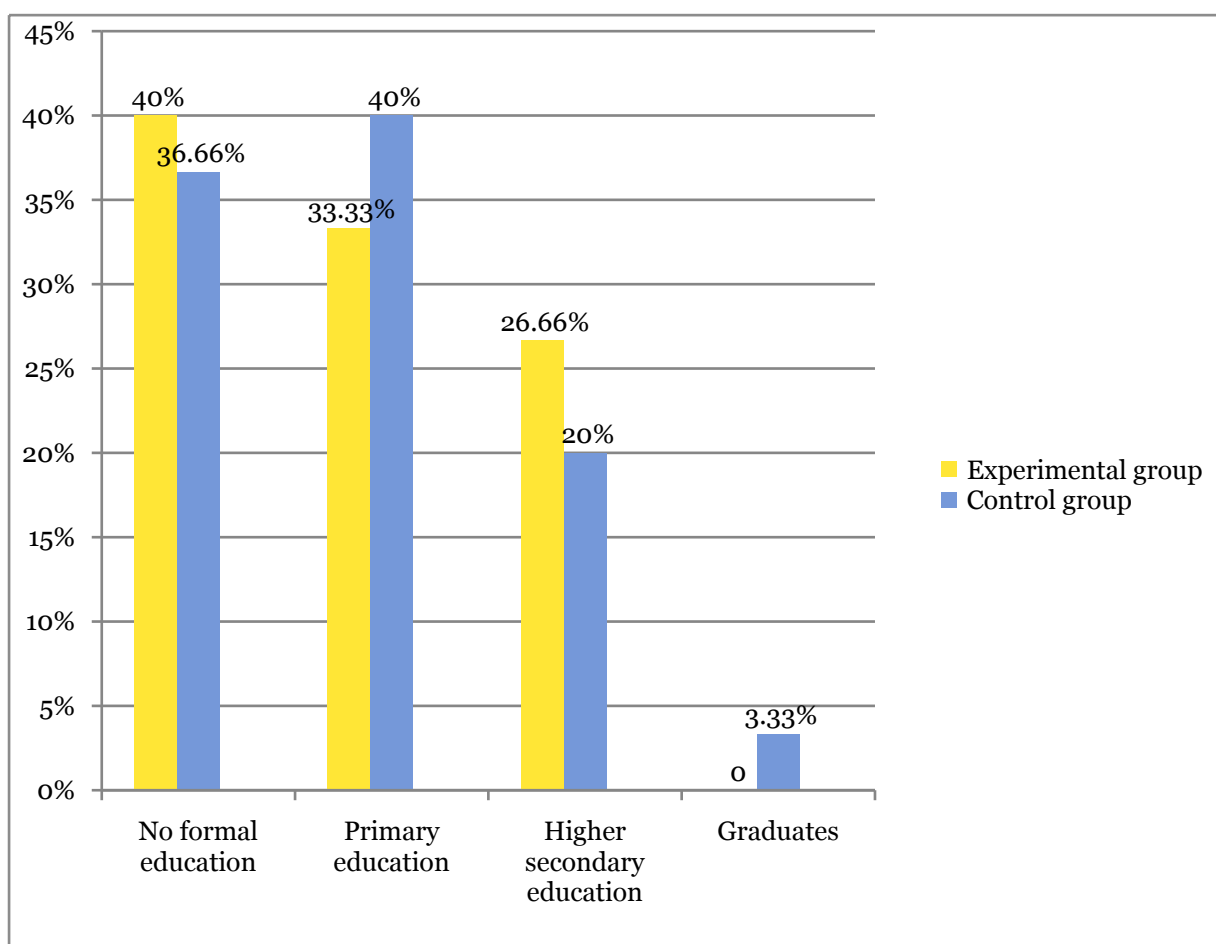


Figure 4.3: Percentage distribution of elderly people according to their education.

The above figure shows that, in the experimental group, the majority, 12 (40%), had no formal education, and in the control group, the majority, 12 (40%), had primary education.

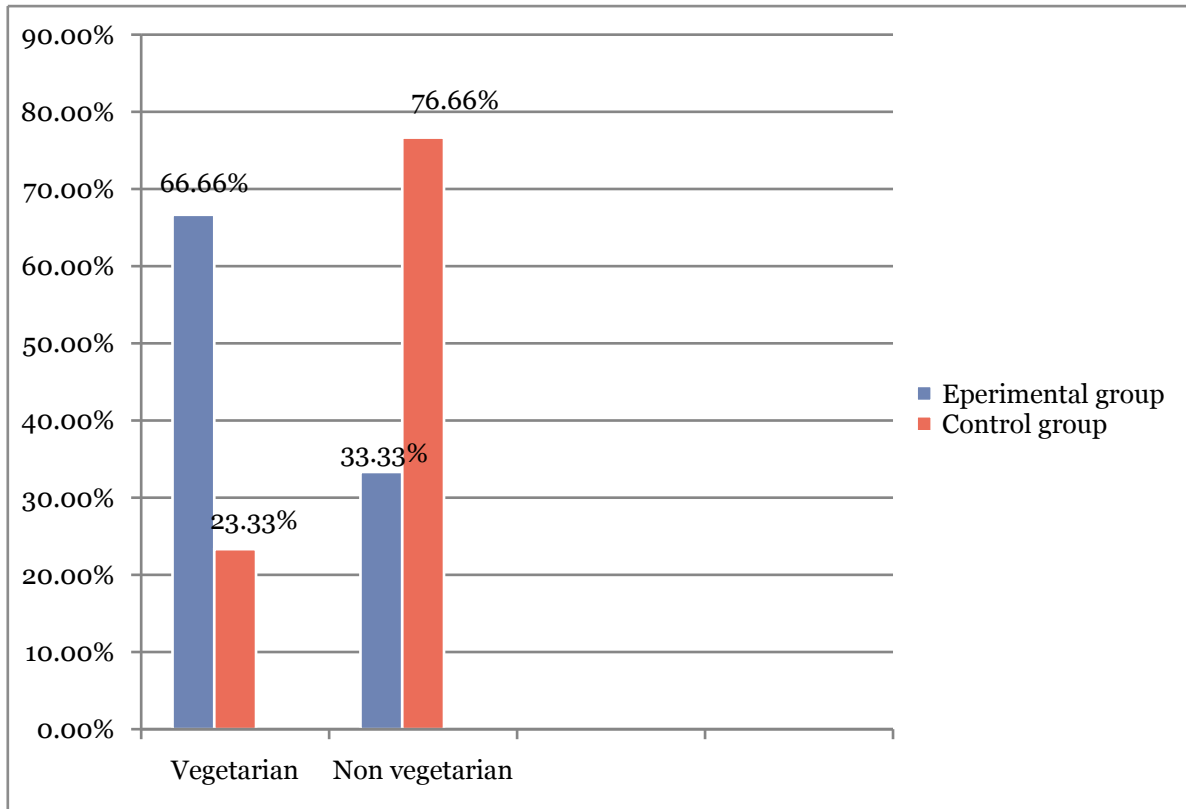


Figure 4.4: Percentage distribution of elderly people according to their food habits

The above figure shows that, in the experimental group, the majority were in the vegetarian food pattern of 20 (66.66%), and in the control group, the majority were in the non-vegetarian food pattern of about 23 (76.66%).

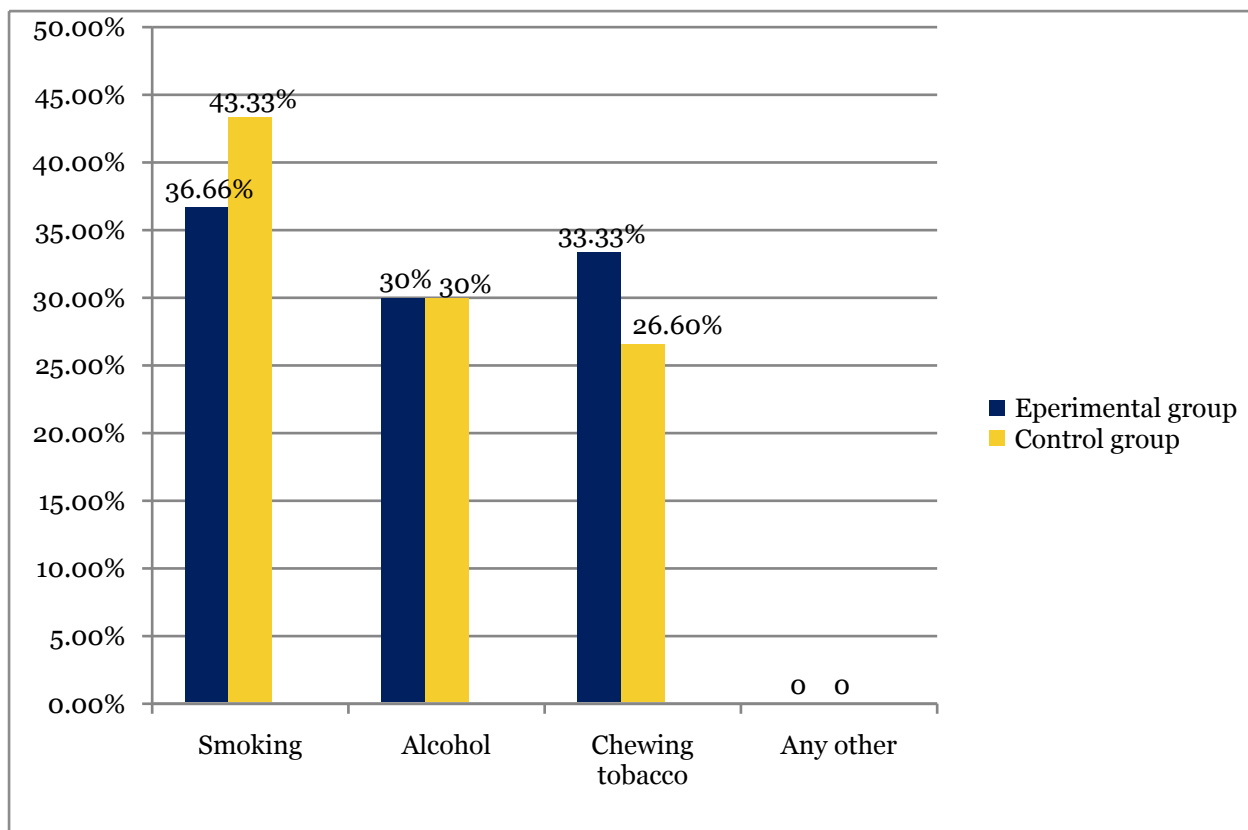


Figure 4.5: Percentage distribution of elderly people according to their personal habits

The above figure shows that the majority, 11 (36.66%), were in the experimental group of smoking personal habit, and in the control group, the majority, 13 (43.33%), had the same smoking personal habit.

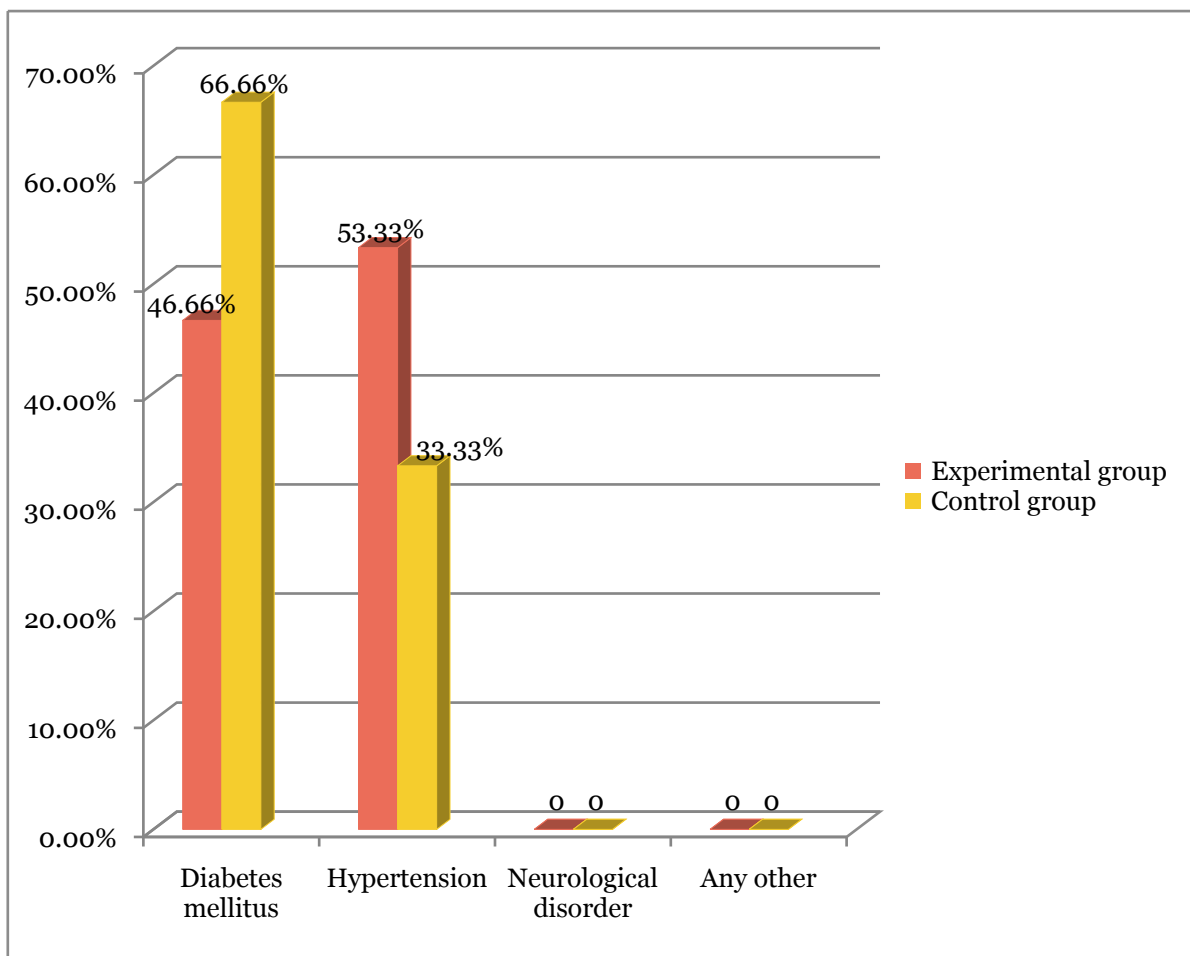


Figure 4.6 Percentage distribution of elderly people according to their associated disease condition

The above figure shows that the majority, 16 (53.33%), were having hypertension in the experimental group, and in the control group, the majority, 20 (66.66%), were having an associated disease condition of diabetes mellitus.

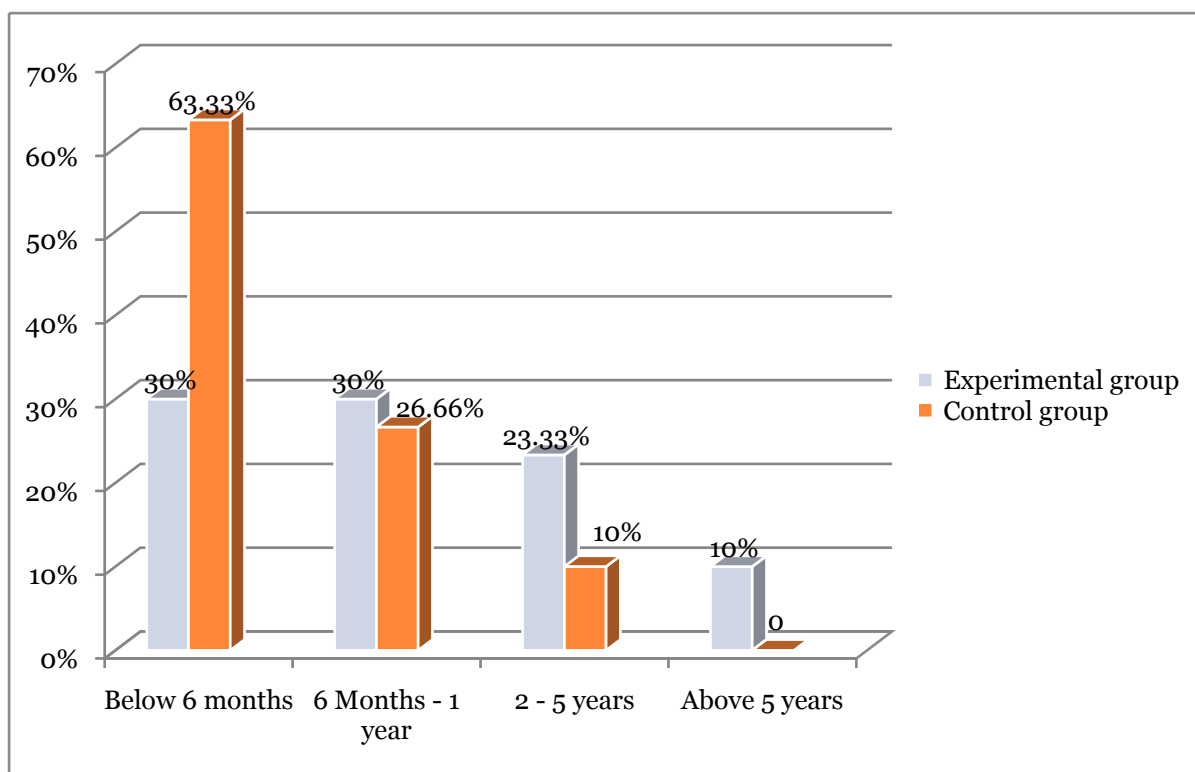


Figure 4.7 : Percentage distribution of elderly people according to their duration of visual problems

The above figure shows that the majority, 9 (30%), were having vision problems for below 6 months and 6 months – 1 year in the experimental group, and in the control group, the majority, 19 (63.33%), had vision problems for below 6 months.

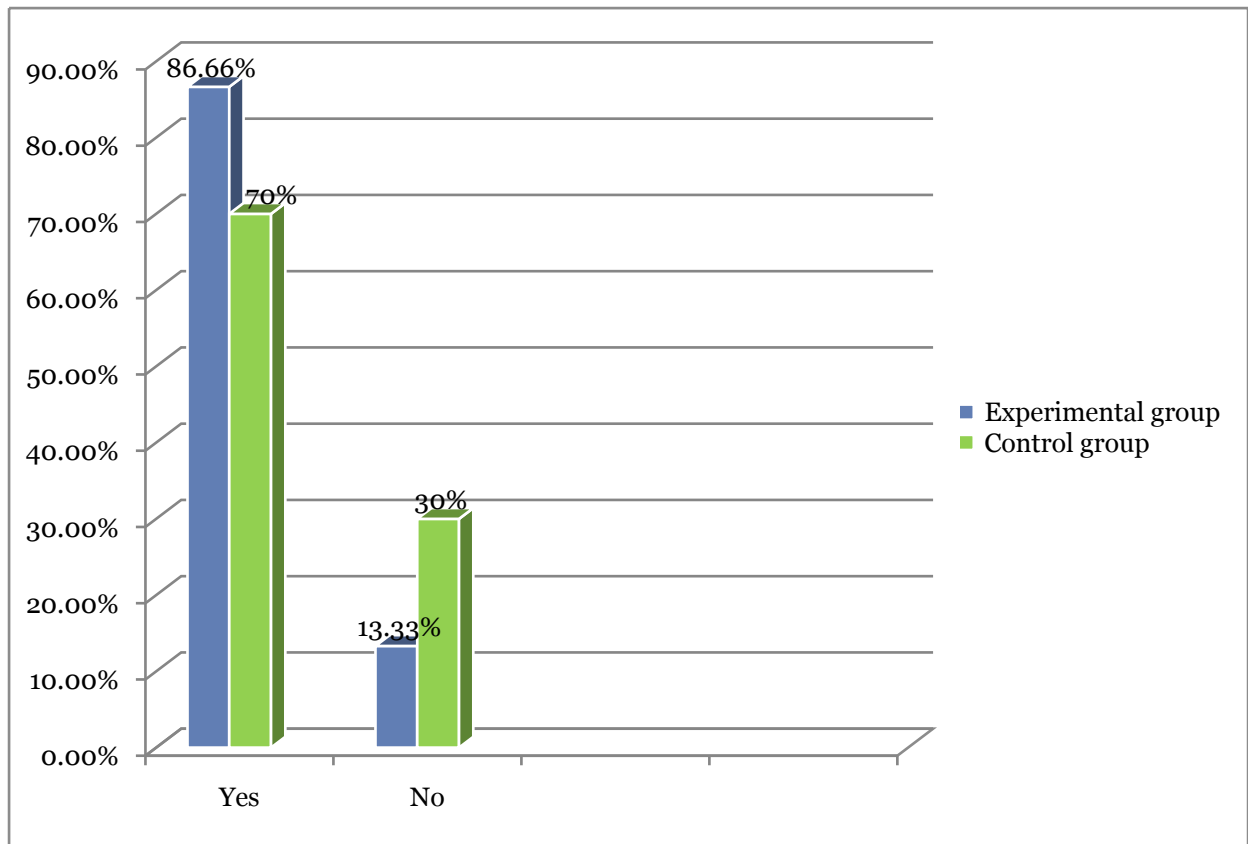


Figure 4.8: Percentage distribution of elderly people according to the use of spectacles or contact lenses

The above figure shows that the majority, 26 (86.66%), were using spectacles or contact lenses in the experimental group, and in the control group, the majority, 21 (70%), were using spectacles or contact lenses.

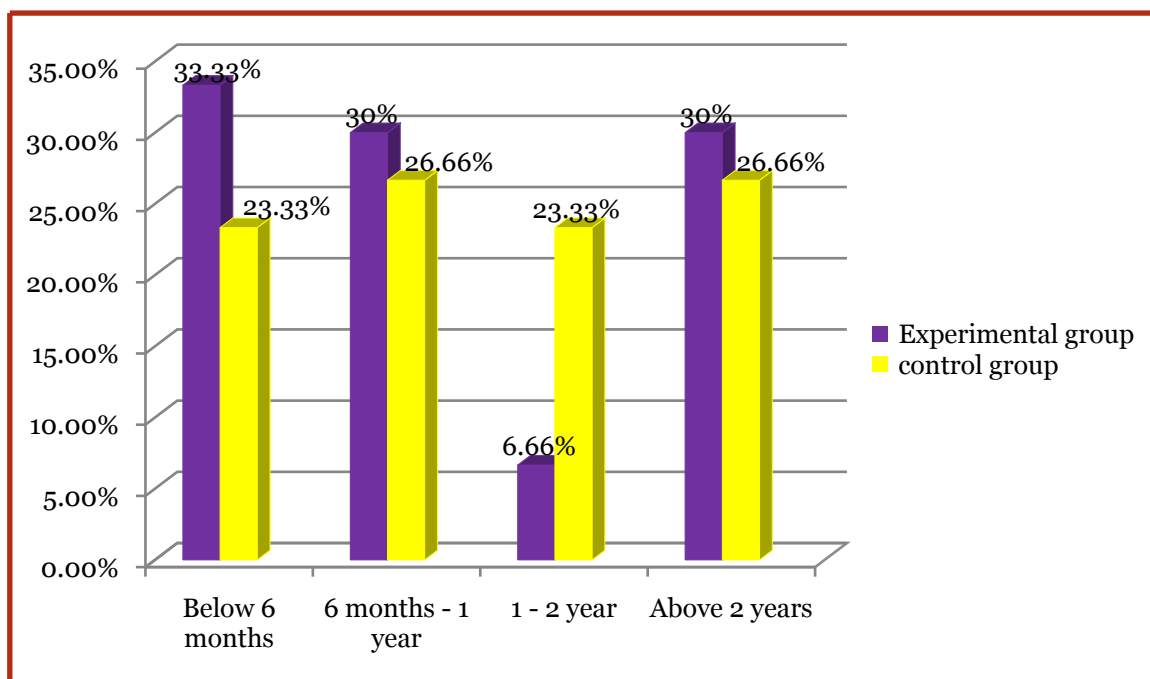


Figure 4.9: Percentage distribution of elderly people according to their duration of using spectacles

The above figure shows that the majority, 10 (33.33%), were using spectacles for less than 6 months in the experimental group, and in the control group, the majority is 8(26.66%) in both 6 months, 1 year, and above 2 years.

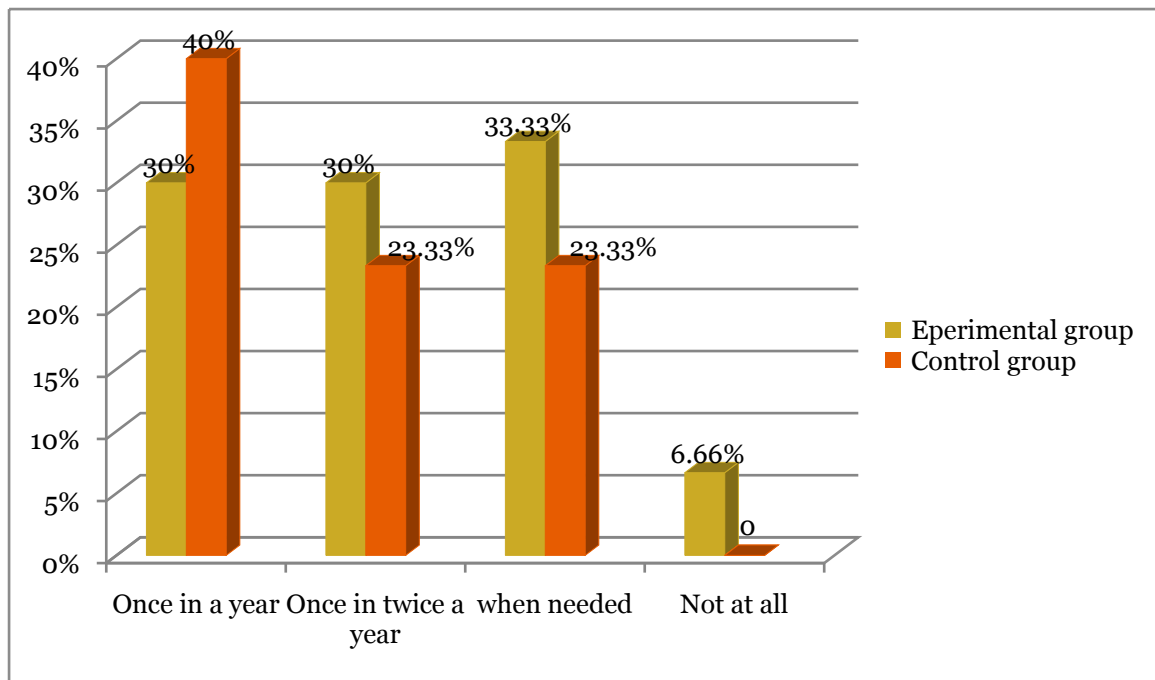


Figure 4.10: Percentage distribution of elderly people according to frequency of eye check-ups

The above figure shows that the majority of 10 (33.33%) received eye check-ups when needed in the experimental group, and in the control group, the majority of 12 (40%) received eye check-ups once a year.

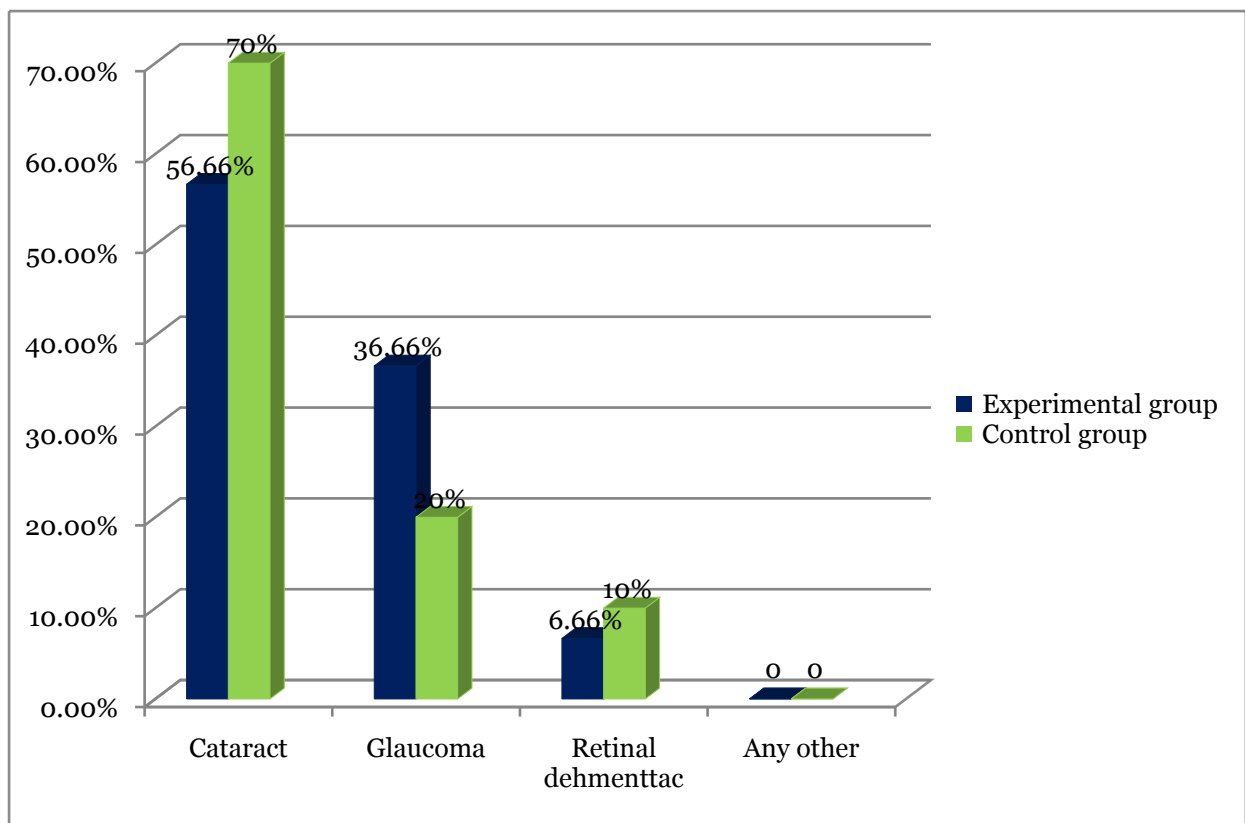


Figure 4.11: Percentage distribution of elderly people according to their previous history of eye surgery

The above figure shows that the majority, 17 (56.66%), had a previous history of eye surgery related to cataract in the experimental group, and in the control group, the majority, 21 (70%), had the same cataract-related previous history of eye surgery.

SECTION II

A) Distribution of elderly people according to pre-test score on the level of visual acuity in experimental and control groups.

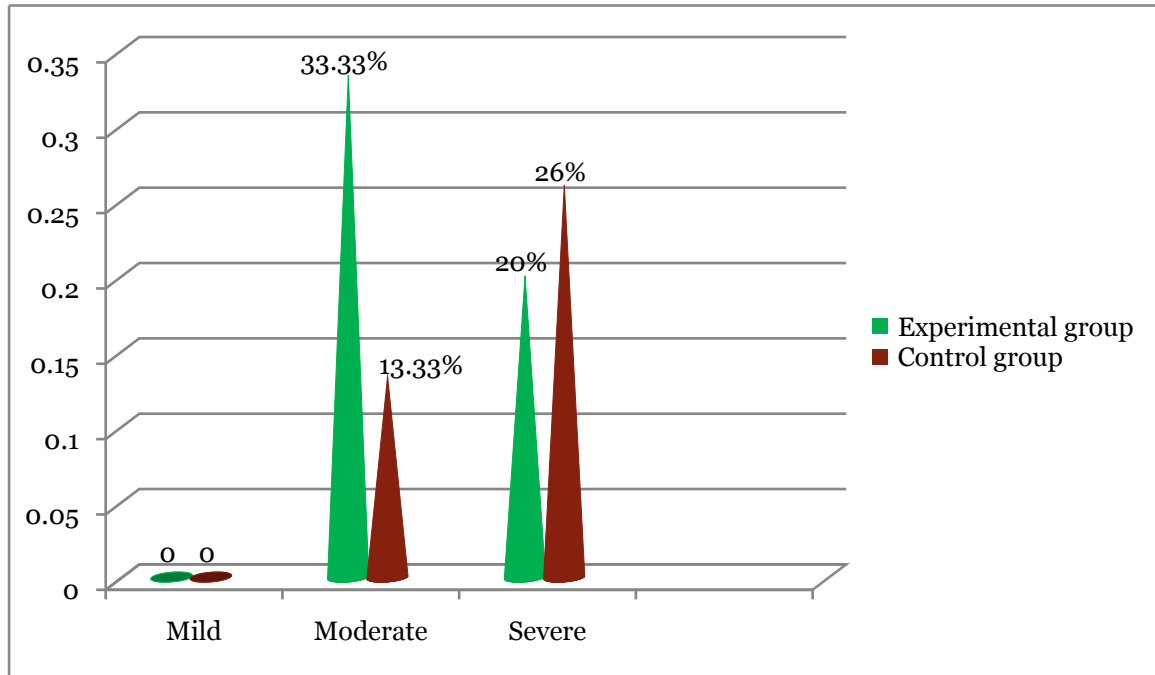


Figure 4.12: Percentage distribution of elderly people according to their pre-test score on the level of vision in the experimental and control groups

The above figure shows that the majority of 20 (66.66%) elderly people had a severe level of visual acuity in the experimental group, and in the control group, the majority of 26 (86.66%) elderly people also had a severe level of visual acuity in the pre-test.

Comparison between the pre-test score on the level of visual acuity in the experimental and control groups.

Table 2

A) Mean, standard deviation, and mean difference on pre-test level of visual acuity among elderly people in the experimental and control groups

GROUPS	MAXIMUM SCORE	PRE-TEST			DIFFERENT IN MEAN %
		MEAN	S. D	MEAN %	5
EXPERIMENTAL GROUP	6	2.06	0.78	34.33%	
CONTROL GROUP	6	1.76	0.67	29.33%	

The above table shows that in the experimental group, the pre-test mean score was 2.06 ± 0.78 and the mean percentage was 34.33%. In the control group, the pre-test score was 1.76 ± 0.67 and the mean percentage was 29.33%.

SECTION III

A) Distribution of elderly people according to post-test score on the level of visual acuity in the experimental and control groups

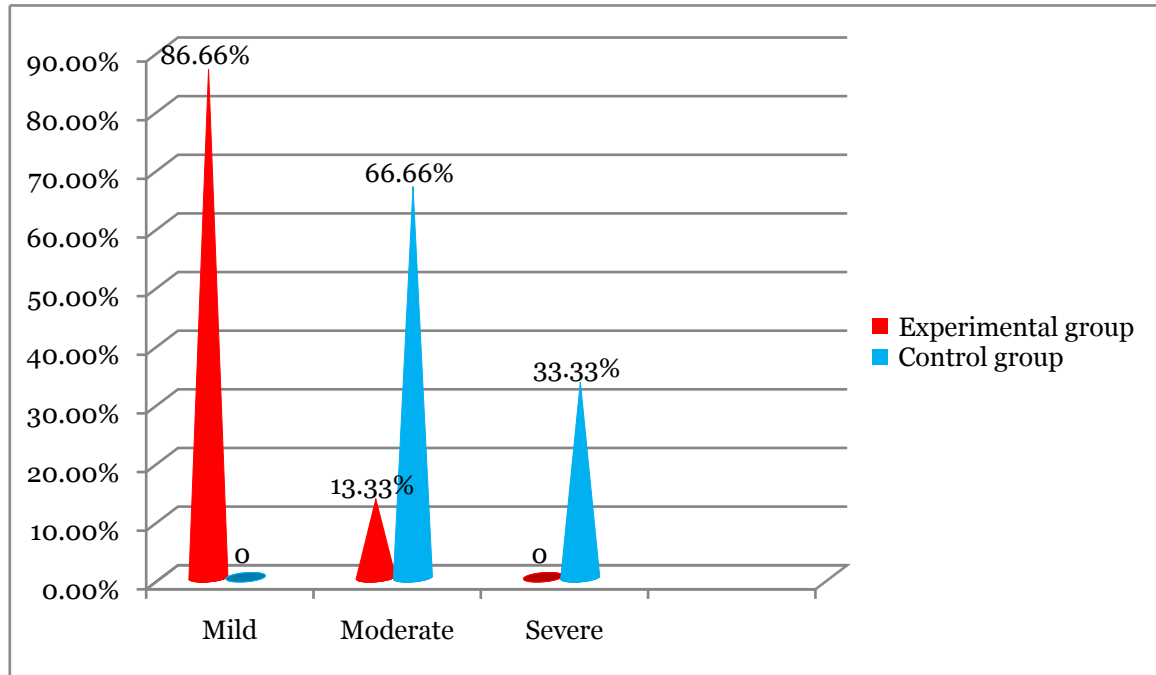


Figure 4.13: Percentage distribution of elderly people according to their post-test score on the level of vision in the experimental and control groups

The above figure shows that the majority of 26(86.66%) elderly people had a mild level of vision in the post-test experimental group, and in the control group, the majority of 20 (66.66%) of elderly people had a moderate level of vision in the post-test.

Comparison between the post-test scores on the level of vision in the experimental and control groups

Table 3

B) Mean, standard deviation, and mean difference on post-test level of vision among elderly people in the experimental and control groups.

GROUP	MAXIMUM SCORE	POST TEST			DIFFERENT IN MEAN
		MEAN	SD	MEAN %	
EXPERIMENTAL GROUP	6	5.23	0.67	87.16%	37.16%
CONTROL GROUP	6	3	1.17	50%	

The above table shows that in the experimental group, the post-test mean score was 5.23 ± 0.67 and the mean percentage was 87.16%. In the control group, the post-test mean score was 3 ± 1.17 and the mean percentage was 50%. It reveals that Bates' therapy was effective in improving the level of vision in the experimental group.

SECTION IV

A) Effectiveness of Bates therapy on the level of vision in the experimental and control groups

Table 4

Mean, standard deviation, t value on the level of vision among elderly people in the experimental and control groups, N=60

GROUPS	MEAN	S.D	t value
EXPERIMENTAL GROUP	5.23	0.67	8.85
CONTROL GROUP	3	1.17	

The above table reveals that the mean score in the experimental group was 5.23 ± 0.67 and the mean score in the control group was 3 ± 1.17 . The t value was 8.85, which is significant at $p \leq 0.05$ level. Thus, it becomes evident that Bates' therapy was effective in improving vision among elderly people in the experimental group. Hence, H1 is retained.

SECTION V

A) Association of selected demographic variables with post-test score regarding vision among elderly people with visual problems in the experimental and control groups.

Table 5

Chi-square test on the level of vision among elderly people with their demographic variables in the experimental and control groups. N = 60

S.NO	DEMOGRAPHIC VARIABLES	EXPERIMENTAL GROUP			CONTROL GROUP		
		X 2	Table Value	Df	X2	Table Value	Df
1.	Age	8.05	12.5	6	0.40	12.5	6
2.	Gender	1.49	9.4	4	0.27	9.4	4
3.	Educational status	2.73	12.5	6	2.20	12.5	6
4.	Food Habits	0.57	5.9	2	0.37	5.9	2
5.	Personal Habits	2.1	12.5	6	1.6	12.5	6
	CLINICAL VARIABLES						
1.	Associated disease condition	0.02	12.5	6	0.2	12.5	6
2.	Duration of visual problem	1.12	12.5	6	0.35	12.5	6
3.	Use of spectacles/contact lenses	0.54	5.9	2	11.42	5.9	2
4.	Duration of using spectacles	0.7	5.9	2	0.6	5.9	2
5.	Frequency of eye check-up	2.8	12.5	6	7.1	12.5	6
6.	Previous history of eye surgery	0.74	12.5	6	23.2	12.5	6

*Significant at $P < 0.05$

The above presented table 5 shows that there was no significant association between the level of visual acuity among elderly people with selected demographic variables in the experimental group and in the control group, and a significant association between the use of spectacles or contact lenses and a previous history of eye surgery. Except for these 2 in the control group, the others are not significant. So H2 is rejected.

CHAPTER V

DISCUSSION

A study was done to evaluate the effectiveness of Bates therapy to improve visual acuity among elderly people with vision problems in selected old age homes at Pudukkottai district. The findings of the study have been discussed in interference to the objective and relevant studies from the review of literature.

Description of demographic variables:

The researcher found that in experimental group distribution of elderly people according to that demographic and clinical variables it shows majority of elderly people were in age group of 60-65 years is 12 (40%) and male gender 16 (53.33 %), most of the people were in no formal education 12 (40%), and vegetarian food pattern is 20 (66.66%), majority were in smoking personal habit is 11 (36.66%) and having hypertension 16(53.33%), the most of them were using spectacles or contact lens is 26 (86.66%) and they were using spectacles below 6 months is 10 (33.33%), the majority were got eye checkups when needed is 10 (33.33%) and had previous history of eye surgery related to cataract is 17 (56.66%).

In control group distribution of elderly people according to their demographic and clinical variables it shows majority of elderly people were between the age of 60-65 years is 13 (43.33%) and male gender is 17 (56.66%), most were in the primary education is 12(40%) and in non-vegetarian food pattern of about 23 (76.66%), the majority were have smoking personal habit is 13 (43.33%), and have associated disease condition of diabetes mellitus is 20(66.66%), the most had vision problem for below 6 months is 19 (63.33%) and were used spectacles or contact lens is 21(70%) and in both 6 month – 1 year and above 2 years are 8(26.66%), the majority were got eye check-up's once in a year is 12(40%) and had same cataract related previous history of eye surgery is 21 (70%).

Objective – 1: To assess the pre-test and post-test level of visual acuity among elderly people in the experimental and control groups.

The study reveals that among elderly people in pre-test, the majority elderly people have severe level of visual acuity 20 (66.66%), moderate level of visual acuity is 10 (33.33%), mild level of visual acuity is 0 in experimental group and in control group the majority of elderly people have severe level of visual acuity 26 (86.66%), moderate level of visual acuity is 4 (13.33%), elderly people have mild level of visual acuity is 0.

The study reveals that among elderly people in post-test, the majority elderly people have mild level of visual acuity 26(86.66%), elderly people have moderate level of visual acuity is 4 (13.33%), elderly people have severe level of visual acuity is 0 in experimental group and in control group the majority of elderly people have moderate level of visual acuity is 20(66.66%), elderly people have severe level of visual acuity is 10(33.33%), and elderly people have mild level of visual acuity is 0.

Objective 2: To evaluate the effectiveness of Bates therapy on visual acuity among elderly people in the experimental group

It reveals that the mean score in the experimental group was 5.23 ± 0.67 and the mean score in the control group was 3 ± 1.17 . The t value was 8.85, which is significant at the $p \leq 0.05$ level. Thus, it becomes evident that Bates' therapy was effective in improving vision among elderly people in the experimental group. Hence, H1 is retained.

The above study findings show that Bates therapy improved the visual acuity in elderly people in the experimental group.

Objective 3: To find out the association between the post-test score on visual acuity among elderly people and their selected demographic variables in the experimental and control groups.

There was no significant association between the level of visual acuity among elderly people with selected demographic variables in the experimental group and the control group. There was a significant association between the use of spectacles or contact lenses and a previous history of eye surgery. Except for these 2 in the control group, the others are not significant. So H2 is rejected.

SUMMARY

The chapter deals with the discussion of the study with reference to the objective and supportive studies. All three objectives have been obtained. The hypothesis H1 was retained, and H2 was rejected.

CHAPTER VI

SUMMARY, CONCLUSION, IMPLICATION, AND RECOMMENDATION

This chapter presents the summary of the study and the conclusion drawn. It classifies limitations of the study, implications, and recommendations in different areas like nursing practice, nursing education, nursing administration, and nursing research, and provides recommendations for the study

SUMMARY OF THE STUDY

A Study to evaluate the effectiveness of Bates therapy on visual acuity among elderly people in selected old-age homes at Pudukkottai.

OBJECTIVES:

- To assess the pre-test and post-test level of visual acuity among elderly people in the experimental and control groups.
- To evaluate the effectiveness of Bates therapy on visual acuity among elderly people in the experimental group.
- To find out the association between the post-test score on visual acuity among elderly people and their selected demographic variables in the experimental and control groups.

HYPOTHESES

H₁: There is a significant difference in the pre-test and post-test levels of visual

Acquity among elderly people in the experimental and control groups

H₂: There is a significant association between the post-test scores on

visual acuity among elderly people and with their selected demographic variable in the experimental group and the control group.

The main study was conducted for a period of 30 days at an old age home in

Pudukkottai. A total sample of 60 elderly people with vision problems was selected according to their inclusion criteria by the purposive sampling technique. Among them, 30 were assigned to the experimental group and 30 were assigned to the control group. The data collection tool consists of two sections: Section I, Demographic variables of elderly people with visual problems, and Section II, the Visual Acuity Scale, which was used to find out the level of visual acuity. The data was analyzed by using descriptive and inferential statistics.

MAJOR FINDINGS ARE SUMMARIZED AS FOLLOWS

The study reveals that among elderly people in pre-test, the majority elderly people have severe level of visual acuity 20 (66.66%), moderate level of visual acuity is 10 (33.33%), mild level of visual acuity is 0 in experimental group and in control group the majority of elderly people have severe level of visual acuity 26 (86.66%), moderate level of visual acuity is 4 (13.33%), elderly people have mild level of visual acuity is 0.

The study reveals that among elderly people in the post-test, the majority elderly people have a mild level of visual acuity 26(86.66%), have moderate level of visual acuity is 4 (13.33%), severe level of visual acuity is 0 in experimental group and in control group the most of elderly people have moderate level of visual acuity is 20(66.66%), severe level of visual acuity is 10(33.33%),mild level of visual acuity is 0.

It reveals that the mean score in the experimental group was 5.23 ± 0.67 and the mean score in the control group was 3 ± 1.17 . The t value was 8.85, which is significant at the $p \leq 0.05$ level. Thus, it becomes evident that Bates' therapy was effective in improving vision among elderly people in the experimental group. Hence, H1 is retained.

The above study findings show that Bates therapy improved the visual acuity in elderly people in the experimental group.

There was no significant association between the level of visual acuity among elderly people with selected demographic variables in the experimental group and the control group. There was a significant association between the use of spectacles or contact lenses and a previous history of eye surgery. Except for these 2 in the control group, the others are not significant. So H2 is rejected.

CONCLUSION

The study was done to evaluate the effectiveness of Bates therapy on visual acuity among elderly people in a selected old-age home in Pudukkottai. The findings reveal that Bates therapy was effective in improving the visual acuity among elderly people with visual problems.

NURSING IMPLICATIONS

The investigator has devised the following implications that may be vital for the community health nurse, community health administrator, nurse educator, and nursing researcher.

Community Health Nursing

- ❖ A community health nurse can train the local volunteers, community health personnel, and family members of elderly people in screening for the risk level related to visual problems.
- ❖ Create early awareness, regular medical check-up, plus alternative therapies (Bates therapy) will prevent the deterioration of visual problems during aging.
- ❖ Help the elderly people identify the pros and cons of Bates therapy.
- ❖ Help the elderly people to strengthen their need and commitment to reduce visual problems by addressing the health-related effects.

- ❖ Involved in health promotion campaigns, free screening activities, and events at the community level to change family attitudes for reducing visual problems.
- ❖ She should aim at providing individual intervention to help the elderly people be aware of the potential risk at an early stage and prevent extensive problems.
- ❖ The focus of attention should be to empower the community by participating in and monitoring health promotion activities of elderly people.
- ❖ Bates therapy to provide to family members regarding the awareness of prevention and management of visual problems.

Nursing Administration

- ✓ Nursing administrators can organize screening for vision-related problems in the place, medical college hospital, and community and school levels.
- ✓ Educational program includes life skill training, recognizing harm, and improving the coping ability of elderly people.
- ✓ The nurse administrator can conduct an in-service education programme for the health personnel on problems of elderly people.
- ✓ Organize specific interventions to reduce vision-related problems and improve activities of daily living.
- ✓ Providing appropriate protocols, trained manpower, and supplies should be undertaken by the nurse administrator, and mobilize and provide funding for elderly health problems.

Nurse Educator

- Organize seminars, workshops, symposiums, and continuing nursing education programs on the management of visual problems, including the alternative/complementary intervention in the treatment of visual problems.
- Select and organize the learning experience for students where a handful of experiences will be obtained in the management of visual problems among elderly people.
- A nurse educator can devise a curriculum for a training programme on Bates therapy, which is helpful for the grassroots workers, nurses, and healthcare professionals to tackle the vision-related problem in various settings.
- Nursing education should prepare nurses with the potential for imparting health information effectively to the students and help them choose suitable methods for reducing visual problems.
- A curriculum should be updated in relation to the changing society since it will help the nursing students to upgrade their knowledge and skills according to that.
- Nursing curriculum should incorporate alternative and complementary therapies for vision-related problems. So that students develop skills and apply them in the field of nursing service, and will be able to take care of the elderly people.

Nursing Practice

- Bates therapy is an alternative therapy that is gaining popularity and is finding a more substantial place in health care. Holistic nursing regards and treats the mind, body, and spirit of the client.
- Nurses use holistic nursing interventions such as Bates therapy.

- Such interventions affect the whole person and are cost-effective, economical, non-invasive, non-pharmacological complements to medical care.
- Bates therapy is one of the sources that can be adopted in patient care, which, through this study, has been proven to reduce visual problems among elderly people. Thereby increases evidence-based practice, and this practice enhances the autonomous role of nursing intervention.

Nurse Researcher

- ❖ Strengthening research to identify future direction to monitor and evaluate the impact of programs and policies related to visual problems.
- ❖ Implementation of an evidence-based approach in the treatment of visual problems as an effective strategy.
- ❖ The study findings can be utilized for secondary analysis and meta-analysis to study the harm related to visual problems.
- ❖ The nurse researcher should be aware of the existing health care system and the status of the nursing profession. Thus, it helps to improve the clinical knowledge, skill, and attitude of the nurse. In this study, management of visual problems is highlighted by the use of Bates therapy, thus it makes a pleasant as well as effective, non-pharmacological and cost-effective intervention for visual problems.

RECOMMENDATIONS

- Based on the findings of the study, the following recommendations have been made for further study:
- A comparative study can be done to assess the awareness about visual problems among elderly people between rural and urban communities.

- A randomized controlled trial can be conducted to determine the effect of acupressure and reflexology on the quality of life of elderly people.
- A similar study could be conducted to evaluate the effectiveness of other non-pharmacological measures for visual problems.
- A similar study could be conducted to evaluate the effectiveness of Bates therapy and Acupressure for visual problems among adults and children.
- Varied bio-physiological parameters can be ruled and instituted with outcome variables for their objectivity.
- Nursing theory can be developed, constructed, and tested on Bates' therapy and Acupressure applicable to the whole quantity of meta paradigm
- A similar study can be replicated on a large scale, thereby the findings can be generalized for the target population
- A qualitative approach can be initiated to generate a hypothesis on Bates therapy and Acupressure.

LIMITATIONS

The study was limited to,

- Elderly people.
- The study is based on the experimental and control groups
- Identify the changes in the visual problems.
- Selected old age home -a) Nesakkaram & b)DERMA old age home.