A STUDY TO ASSESS THE EFFECTIVENESS OF SWALLOWING EXERCISES ON LEVEL OF DYSPHAGIA AMONG PATIENTS WITH ORAL/ OESOPHAGEAL/ LARYNGEAL CANCER AT ASHWIN HOSPITAL, COIMBATORE

By

Reg. No: 301211106

A DISSERTATION SUBMITTED TO THE TAMIL NADU Dr. M. G. R. MEDICAL UNIVERSITY, CHENNAI IN PARTIAL FULFILLMENT OF REQUIREMENT FOR THE DEGREE OF MASTER OF SCIENCE IN NURSING

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Dedicated to
Almighty God
Lovable Parents,
Husband,
Relatives
& Friends

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CHAPTER – I

Introduction

You can be a victim of cancer,

Or a survivor of cancer, it's a mindset

- Dave Pelzer

Human body is the most beautiful and generous creation of God. The voice of wisdom and experience tells us that one of the most important things in life is to be healthy. Every country in the world is focusing towards the destiny of *health for all*. The concept of health is evolving with a growing recognition that there are social, political, economical, environmental and cultural issues which affect health (Tony Berberabe, 2011).

Amanda Mc Lean (2014) explained that cancer is often thought of as an untreatable, unbearably painful disease with no cure. Cancer is undoubtedly a serious and potentially life threatening illness. However, it is a misconception that all forms of cancer are untreatable and deadly. In India, the incidence of oral / oesophageal cancer is moderately high and is associated with certain diets and lifestyles. Oesophageal cancer is the second most common cancer among males and the fourth most common cancer among females (World Health Organization, 2013).

Richard Hogg (2013) stated cancer as an uncontrollable growth of cells that invade and cause damage to surrounding tissues. As we are aging, there is an increase in the number of possible cancer causing mutations in our DNA. This makes age an important risk factor for cancer. Several viruses have also been linked to cancer and

anything else that suppresses or weakens the immune system, inhibits the body's ability to fight infections and increases the chance of developing cancer. Oral cancer appears as a growth or sore in the mouth that does not go away. Oral cancers of the lips, tongue, cheeks, floor of the mouth, hard and the soft palate, sinuses and pharynx can be life threatening if not diagnosed and treated early.

Douglas Bettcher (2013) described tobacco as the most important oral cavity and oropharyngeal cancer risk factor. Oral cancers are largely lifestyle diseases majority of cases are related to tobacco use. Approximately 90% of people with oral cancer are tobacco users. People who stop using tobacco even after many years of use can greatly reduce their risk of all smoking related illnesses including oral cancer.

The main aim of the fight against cancer is to decrease mortality from the disease. A universal cure for all types of cancer is still not in the foreseeable future. Decreasing the incidence of cancer can be achieved by modulating the known causes of cancer. In this regard changes in lifestyle for example adhering to a healthy diet, regular exercise and avoiding smoking and excessive exposure to ultraviolet radiation can decrease the incidence of cancer (Housman and Dorman, 2014).

National Cancer Institute (2012) stated that cancer brings about major changes in the way body works or the way one feel about themselves. Signs and symptoms like high fever, fatigue, pain, unexplained weight loss, sore throat, indigestion or swallowing problems are common in cancer. For patients with oral/ oesophageal/ laryngeal cancer, dysphagia is the most common complaint.

Jeri. A. Logemann (2008) explained that the brain is a complex organ in which different areas are designated for the control of different functions and swallowing is no exception. Swallowing is a complex function that affects the physical and mental health of all human beings. Human beings swallow 600 times per day. Under normal circumstances swallowing is performed without thought or effort. In fact, there are multiple brain areas dedicated to the control of swallowing. Damage to one or more of these areas can lead to dysphagia. Impaired swallowing or dysphagia may also occur because of a wide variety of structural or functional conditions including stroke, cancer, neurologic disease and gastroesophageal reflux disease.

Joy. E. Gaziano (2013) stated that in head and neck cancer patients dysphagia may be caused by surgical ablation of muscular, bony, cartilaginous or nervous structures or may be attributable to the effects of antineoplastic agents including radiation and/or chemotherapy. The severity of the swallowing deficit is dependent on the size and location of the lesion, the degree and extent of surgical resection, the nature of reconstruction or the side effects of medical treatments. In the long term patients may experience some permanent eating and swallowing disability as a result of treatment but in many cases this can be treated.

Jeffrey. B. Palmer (2010) defined dysphagia as a Greek word that means disordered eating. Dysphagia refers to difficulty in eating as a result of disruption in the swallowing process. Impaired swallowing or dysphagia can cause significant morbidity and mortality. The best treatment modality for dysphagia is swallowing exercises which help to improve the range of movement and strengthen muscles of swallowing.

Christian Nordqvist (2012) stated that for patients with cancer, dysphagia is a common problem which can lead to the risk of malnutrition, food going down the wrong way, choking, and lung infections (aspiration pneumonia). Other signs include patches on the lining of the mouth or tongue, usually red or red and white in color, mouth ulcers that do not go away, a sore that does not heal, a swelling in the mouth that persists for over three weeks, a lump or thickening of the skin or lining of the mouth, pain when swallowing, loosening teeth, jaw pain and stiffness, weight loss, heartburn, sore throat, painful tongue, a hoarse voice and pain in the neck that does not go away.

Samuel. J (2009) explained that swallowing exercises are generally designed to improve range of motion of oral and pharyngeal structures to improve sensory input prior to the swallow or to take voluntary control over the timing or coordination of selected oropharyngeal movements during swallow.

Marilene Wang (2013) conducted an experimental study to investigate the effectiveness of swallowing exercises called swallow preservation protocol on patients with head and neck cancers who receive chemotherapy and radiation therapy, results showed that the patients who followed the swallow preservation protocol had a faster return to normal diet and were less likely to have unwanted side effects such as worsening of diet or narrowing of the throat passage compared with the patients who did not follow the swallow preservation protocol. She stated that patients benefit immediately after treatment and for a prolonged time afterward.

Neumann. S (2010) conducted an experimental study to assess the effectiveness of swallowing exercises on patients with neurological disorders who

experienced cricopharyngeal dysfunction, results showed that 90% of patients with cricopharyngeal dysfunction improved with swallowing exercises hence concluded that neurological patients with cricopharyngeal dysfunction can be effectively treated with swallowing exercises.

Patients with head and neck cancer face severe psychological and functional problems associated with the diagnosis and treatment of their disease. Serious and persistent dysphagia is now recognized as a common complication for patients who have undergone chemoradiation therapy. Indeed, some cancer treatment centers recommends prophylactic swallowing exercises for patients undergoing chemoradiation treatment.

Need for the Study

Winslow (2010) stated health as an essential factor for a happy contented life. Oral health is an integral component of general health and is now seen as preventive measures that maintain health and contribute to good health.

American Cancer Society (2013) explained that more than half of all countries worldwide are struggling to prevent cancer and provide treatment and chronic care to cancer patients, currently many of these countries do not have a functional cancer control plan that includes prevention, early detection, treatment and care.

Keith. M. Baldwin (2013) stated that oesophageal cancer is a devastating disease. Although some patients can be cured, the treatment for oesophageal cancer is protracted, diminishes quality of life and is lethal in a significant number of cases.

The principal histologic types of oesophageal cancer are squamous cell carcinoma and adenocarcinoma.

World Health Organization (2013) stated in terms of cancer deaths, the mortality rate among men and women in India is almost the same. India has the highest number of oral cancers in the world with 75,000 to 80,000 new cases every year. Cancer of lip and oral cavity has emerged as the deadliest among Indian men. Gutka and other forms of chewing tobacco sold in small pouches across the country are a serious health hazard as they are targeted at the youth and children.

International Agency for Research on Cancer (2013) described that cancer is the leading cause of death worldwide 7.6 million people died from cancer in 2008 and every year almost 13 million cancer cases are newly diagnosed. Currently one third of all cancer deaths are due to modifiable risks including tobacco use, obesity, harmful use of alcohol and infections. Cancer is one of the second largest killer disease next to heart diseases. It is projected by the year 2015 two third cancer will occur in the developing world.

Geetha Reddy. N (2013) stated that no one in the world wishes to invite cancer and no one can predict who will suffer with cancer. At least we can try not to invite cancer by doing minor life style changes. People who practice swallowing exercises regularly tend to have improvement in masticatory muscle strength and coordination which decreases the risk of choking or aspiration, drooping of the lower face and lips which can lead to drooling, spilling of food and liquids, difficulty in closing the lips while eating, sleeping or resting, gagging, unintentional weight loss and difficulty

chewing. American Cancer Society recommends exercising 30 minutes, at least 5 days a week for cancer prevention.

Joanna Lyford (2013) stated that swallowing exercises are designed to preserve the range of motion in certain mouth and neck muscles that are involved in swallowing. Additionally, the exercises were created to counter the formation of extra tissue caused by the radiation, which can result in loss of swallowing ability. Evidence suggests that exercise based approaches to swallowing rehabilitation do succeed in changing muscle strength and function.

Sue Janse (2013) reported that swallowing exercises significantly improve swallowing function and dysphagia specific quality of life measures, with reported changes in their social life and dietary intake. Management of swallowing problems must be carefully designed for each individual patient. There are no specific techniques that consistently improve every patient's swallowing. A basic principle of rehabilitation is that the best therapy for any impaired activity is the activity itself. Similarly, swallowing is generally the best therapy for swallowing disorders.

During investigator's clinical experience, the researcher found that patients with oral/ oesophageal/ laryngeal cancer were not aware about the swallowing exercises which helps to reduce the level of dysphagia. The researcher identified that patients undergoing chemotherapy and radiation therapy had long term side effects like difficulty in swallowing. Globally, dysphagia can result in dietary restriction, malnutrition and affects the quality of life. Swallowing exercise is an easy method to practice and economical to follow by all age groups. So the researcher intended to do

a study on the effectiveness of swallowing exercises among patients with oral/ oesophageal/ laryngeal cancer.

Statement of the Problem

A Study to Assess the Effectiveness of Swallowing Exercises on the Level of Dysphagia Among Patients with Oral/ Oesophageal/ Laryngeal Cancer at Ashwin Hospital, Coimbatore.

Objectives of the Study

- To assess the level of dysphagia among patients with oral/ oesophageal/ laryngeal cancer in control group and experimental group.
- To teach swallowing exercises for the experimental group.
- To assess the effectiveness of swallowing exercises on level of dysphagia in experimental group.
- To compare the effectiveness of swallowing exercises on level of dysphagia in control group and experimental group.
- To associate the findings of pretest score of dysphagia with selected demographic variables in experimental group.

Hypothesis

H_1 : The swallowing exercises will significantly reduce the level of dysphagia among patients with oral/ oesophageal/ laryngeal cancer.

H_2 : There is a significant association between level of dysphagia and selected demographic variables.

Operational Definitions

Effectiveness

It refers to the improvement of swallowing ability on the level of dysphagia which is explored by the Waxman's modified dysphagia assessment scale.

Swallowing Exercises

The training of muscles of swallowing for the easy ingestion of liquids or solids secondary to injury of the muscles which helps to maintain the range of motion of mouth and neck muscles involved in swallowing.

Dysphagia

Dysphagia is an impairment in the ability to swallow.

Oral / Oesophageal / Laryngeal Cancer

It refers to the patient with malignant growth or tumor in the oral cavity, oesophagus and larynx.

Assumptions

- Patients with oral/ oesophageal/ laryngeal cancer will experience dysphagia.
- Practice of swallowing exercises will improve swallowing among patients with oral/ oesophageal/ laryngeal cancer.

CHAPTER – II

Review of Literature

Review of literature is the key step in research process. Traditionally it is considered as a systematic and critical review of the most important scholarly literature relevant to research project.

A literature review is a written summary of the state of existing knowledge on a research literature involves the identification, selection, critical analysis and written description of existing information on topic (Polit, 2003).

Review of Literature is Discussed Under the Following Headings

- Literature related to overall view of oral/ oesophageal/ laryngeal cancer
- Literature related to health benefits of swallowing exercises
- Literature related to effectiveness of swallowing exercises on reducing dysphagia

Literature Related to Overall View of Oral/ Oesophageal/ Laryngeal Cancer

Cancer can occur at any site or tissue of body and may involve any type of cells. It is estimated that there are approximately 2- 2.5 million cases of cancer in India at any point of time, with around 7 – 9 lakh new cases being detected each year (Julka PK, 2013).

The Cancer Chronicle (2013) explained that cancer is a disease that is steadily on the rise, both due to the increased detection and due to actual increase in incidence.

Modernization, substance abuse, gastronomic gratifications and physical comfort agents form important contributory factors. More infectious agents attack us now and our minds are battered with powerful stresses and permitting adequate time for risk factors to transform some of our cells to malignant ones.

Globocan (2010) reported that the highest incidence rates of oral and pharyngeal cancer are seen in South Central Asia and parts of Central and Western Europe. For laryngeal cancer, the highest incidence rates are seen in parts of Europe, Western Asia, South America and Southern Africa.

Ferlay. J. et.al., (2013) estimated number of 263,020 new cases of cancers of the lip and oral cavity, 136,622 new cases of esophageal cancer and 150,677 of cancer of the larynx been diagnosed worldwide, representing 1%, 2% and 1.2% respectively of the total number of cancer cases diagnosed per year. The cancers of the lip and oral cavity, oesophagus and larynx are two-three times more common in men than in women. Risk increases with age. All together, these cancers are the seventh most frequent type of cancer worldwide. Nearly 4% of all cancer deaths were attributed to these cancers.

Manik Rao Kulkarni (2013) stated that there is a significant difference in the incidence of oral/ oesophageal/ laryngeal cancer in different regions of the world, varying from over 80,000, 77,000 and 29,000 cases every year in India, it accounts for over 30% of all cancers in India.

Hashibe. M (2009) reported that the major risk factors for oral / oesophageal / laryngeal cancer are consumption of preserved or salted foods, paan (betel quid), poor

oral health, occupational exposure, radiation exposure, epstein barr virus infection and ancestry. People who use both alcohol and tobacco have much greater risks of developing cancers of the oral cavity, larynx, and oesophagus than people who use either alcohol or tobacco alone.

Galeone. C (2009) investigated the role of fried foods on oral and oesophageal cancers, conducted in Italy and Switzerland. A diet rich in animal fats has been associated with an increased risk of these cancers. However, fish and potatoes which are usually fried in oils, mostly olive oil and specific or mixed seeds oil and it was found that these types of oils were protective for oral / pharyngeal and oesophageal cancers.

Stanley Tonui, et.al., (2010) explained that certain geographically distinct areas of the world have very high rates of oesophageal cancer and Western Kenya is identified as a high risk area with an unusual percentage of cases in subjects 30 years of age or younger. It was found that tobacco and alcohol consumption were reported by only a minority of young cases, they do not seem to be major etiologic factors. Out of 109 young patients, notably almost 80% of patients had a family history of cancer, including a 43% with a specific family history of esophageal cancer. The contribution of other risk factors may include consumption of very hot tea, limited diet and exposure to polycyclic aromatic hydrocarbons.

Alfred Rademaker (2013) stated that people working in certain jobs in the construction, metal, textile, ceramic, logging, and food industries have an increased risk of cancer of the larynx and there is sufficient evidence in humans that human papiloma virus 16 causes cancer of the oral cavity.

Frank. C, et.al., (2008) explained that cancers in the oral/ oesophageal/ laryngeal cancer can cause a range of predictable but complex swallowing problems and can have a negative effect on nutritional status due to loss of swallowing function and structural deformities. Dysphagia can profoundly affect recovery as it may contribute to aspiration pneumonia, dehydration, odynophagia, xerostomia, pain and mucositis.

American Cancer Society (2011) revealed that half of all men and one third of all women develop cancer during their lifetime. Today, millions of people are living with cancer or have had cancer. The risk of developing most types of cancer can be reduced by changes in a person's lifestyle, such as quitting smoking, limiting time in the sun, being physically active, and eating a better diet. The sooner a cancer is found and treated, the better the chances are for living for many years.

According to Rosenthal, et.al., (2008) there is a natural tendency to increase the intensity of treatment modalities under the belief that more will achieve better results. The adverse effects of current chemotherapy and radiation therapy regimens have generally reached the limits of toxicity. A result is that a number of centers have noted higher rates of acute and chronic swallowing disorders with the use of aggressive radiation and chemotherapy schedules. Specific management techniques such as swallowing exercises, postural changes, dietary modifications can help to prevent and reduce dysphagia and aspiration. The approach involves early intervention and close monitoring of symptoms and swallowing progress during and after therapy to maximize long term function.

Literature Related to Health Benefits of Swallowing Exercises

Exercising the swallowing muscles is the best way to improve the ability to swallow. Swallowing exercises are designed to increase the range of movement which will help in speech and swallow functioning (Reynolds. D, 2009)

Robert Preidt (2013) stated that radiation treatment can interfere with a person's ability to swallow, but performing swallowing exercises can help patients minimize weakness that can occur after periods of not swallowing. Eating and doing swallowing exercises during the treatment period were linked to better long term diets after treatment ended and less time relying on a feeding tube.

Shaun Mason (2013) stated that head and neck cancer patients receiving radiation as part of their treatment were less likely to suffer with unwanted side effects such as worsening of diet, need for a feeding tube or narrowing of the throat passage if they complied with a set of prescribed swallowing exercises during therapy.

Eric Genden (2013) conducted a study with 26 patients, asserted that swallowing difficulties are one of the largest problems experienced by patients undergoing Chemoradiation treatment. By using performance status scale swallowing ability was assessed. It estimates that 20 % lose their ability to swallow for the rest of their lives. Swallowing therapy exercise session was given to the patients for one month. It showed improvement in swallowing function.

Shaker. R (2010) conducted a study on patients with diverse etiology like neurological pathology, cardiovascular disease and abnormal upper esophageal

sphincter opening. Patients underwent swallow postures and swallow maneuvers for dysphagia, such as chin tuck, supraglottic, effortful swallow and head-raising exercise program. They concluded with improvement in the anteroposterior diameter of the sphincter opening and the anterior laryngeal excursion, decrease of post deglutitive residue and resolution of aspiration.

Robbins (2013) studied the effects of an isometric lingual exercise program by compressing an air filled bulb between the tongue and the hard palate. After 8 weeks of progressive resistance lingual exercises, all patients had significantly increased isometric and swallowing pressures. Patients showed significant improvement in swallowing function and dysphagia specific quality of life measures with reported changes in their social life and dietary intake.

Kerstin. M (2010) conducted a retrospective survey among newly diagnosed 79 patients with head and neck cancer without prior treatment. Patients with swallowing dysfunctions were divided into two groups who served as the experimental (n=68) and control group (n=11). Parameters of swallowing function like oral impairment, oesophageal impairment and aspiration were assessed by swallowing performance status scale (SPSS) score and degree of dysfunction were analyzed by using χ^2 and fisher exact tests. 40% of the patients with oral cancer and 55% of the patients with oropharyngeal cancer had aspiration and swallowing impairment. Experimental group was provided with swallowing exercises for a period of 1 month and control group was given no treatment. Results showed that the aspiration status among both the groups were significantly different, only 14% of patients with oral cancer and 30% with oropharyngeal cancer aspirated in the experimental group which showed significantly better swallowing function.

Hwang. C. H, et.al., (2013) conduced a study to evaluate the effect of swallowing stimulation on the recovery of swallowing function in patients who had been intubated for at least 48 hours in the intensive care unit. The stimulation therapy consisted of thermal tactile stimulation, oral stimulation, oral massage and a cervical range of motion exercise. Patients were randomly assigned to either an experimental group receiving stimulation (n=15) and control group receiving no stimulation (n=18). Therapist performed therapy for 15 minutes twice a day for 6 days per week. It showed a gradual improvement in swallowing function.

Colangello. L (2009) conducted a study on patients with oropharyngeal dysphagia. All patients were randomized to the shaker exercise for 6 weeks. There was significantly less aspiration post therapy in patients in the shaker group, indicating 76% improvement in swallowing physiology.

Watts. C. R (2013) made comparison of two rehabilitative dysphagia exercises. 20 normal young females performed an isometric jaw opening exercise against resistance and an isometric head lift exercise both targeting activation in the hyolaryngeal (suprahyoid) muscles. Activation in the hyolaryngeal musculature was significantly greater when participants performed the isometric jaw opening exercise compared to the head lift exercise.

Rietber, et.al., (2009) stated that swallowing delay, weakening pharyngeal constriction and poor coordination of laryngeal and upper esophageal spinchter is compromised in multiple sclerosis patients. In their high methodological quality study with multiple sclerosis, the best evidence synthesis showed strong evidence in favor of exercise therapy for patients with multiple sclerosis compared to no exercise. It

showed 60% improvement in swallowing delay, 36% improvement in weaking pharyngeal constriction.

Steele. C. M (2013) reported that three techniques in particular show promise for improving muscle strength and function related to swallowing, the shaker exercise, expiratory muscle strength training, and tongue pressure resistance training. All three techniques involve principles of task specificity, muscular load resistance, and intensity, and aim to achieve functional changes in swallowing through changes in muscle physiology derived from strength and endurance training. Improvement in aspiration is a common finding for individuals with dysphagia receiving one of these three treatment approaches.

Mc Culloug. G. H (2013) conducted a prospective crossover study on 18 participants with dysphagia post stroke evaluated with video fluoroscopy after treatment using the mendelsohn maneuver versus no treatment. Results demonstrate gain in the extent of hyoid movement and upper esophageal spinchter opening and improvements in coordination of structural movements with each other as well as with bolus flow.

Kagaya. H (2011) reported aspiration pneumonia as the most serious problem for patients with dysphagia. Body positions that minimize aspiration include reclining position, chin down, head rotation, and side-lying/ recumbent position. Functional training to improve eating ability is also used to minimize aspiration such as exercises to improve cervical range of motion, supraglottic swallow, the mendelsohn maneuver, the shaker exercise, balloon training, training for activities of daily living and physical strength training.

Permsirivanich. W (2009) conducted a randomized control study on 23 stroke patients with persistent pharyngeal dysphagia. The subjects received 60 minutes of either rehabilitation swallowing therapy (n=11) and neuromuscular electrical stimulation therapy (n=12) treatment for five consecutive days until they reached functional oral intake scale (FOIS) level 7. The outcome measures were assessed by change in functional oral intake scale. Average changes in scores were 2.46 +/- 1.04 for the rehabilitation swallowing therapy group and 3.17+/-1.27 for the neuromuscular electrical stimulation therapy group, statistically significant at $p<0.001$. No complications were observed in either group. It was concluded that both the groups showed a positive effect in the treatment of persistent dysphagia in stroke patients, neuromuscular electrical stimulation therapy was significantly superior.

Literature Related to Effectiveness of Swallowing Exercises on Reducing Dysphagia

Marilene. B. Wang (2013) conducted a study on 85 patients who underwent radiation therapy or chemoradiation treatment from 2007-2012 to evaluate whether swallowing exercises implemented before, during, and after radiation therapy and chemoradiation therapy could help maintain post treatment swallow function. Results demonstrate that compliance with swallowing exercises during radiation or chemoradiation treatment is beneficial to patients retaining their ability to swallow after treatment is over. The real benefit of this compliance is that patients benefit immediately after treatment, and for a prolonged time afterward.

Van Der Molan (2011) conducted a randomized controlled trial of 49 individuals with advanced head or neck cancer receiving chemoradiation therapy

treatment. The study examines the effect of two different oral exercise regime on swallowing and mouth opening outcomes. The majority 69% of participants were able to perform the exercises. Approximately 53% of the participants did not have any problems performing the exercises. However, 47% of the participants reported difficulties primarily with the swallowing strength maneuvers.

Amdur. R. J (2012) conducted a study to investigate the impact of performing behavioral swallowing exercises during radiation therapy/ chemotherapy on muscle size and composition. The study indicated that although all patients who underwent radiation therapy/ chemotherapy exhibited significant deterioration of muscle composition through treatment, patients who performed swallowing exercises exhibited greater preservation of three prime swallowing muscles: genioglossus, mylohyoid and hyoglossus.

Hutcheson. K. A, et.al., (2013) conducted a study that included 497 patients who underwent treatment with radiation or chemoradiation for oral cancer. They found that patients who maintained oral intake of food during treatment and adhered to swallowing exercises were able to maintain a better long term diet after treatment was complete. Patients who either eat or practice swallowing exercises fare better than patients who do neither and patients who do both, eat and practice swallowing exercises have the highest rate of return to a regular diet and the shortest duration of dependence on a feeding tube.

Tamar Kotz (2012) conducted a randomized controlled trial with 26 patients to assess the efficacy of prophylactic swallowing exercises on swallowing function in

patients undergoing chemoradiation therapy for head and neck cancer. Patients performed 5 targeted swallowing exercises throughout their chemoradiation therapy. Control group had no prophylactic exercises and were referred for swallowing treatment after completion of chemoradiation therapy. Swallowing function was assessed with the functional oral intake scale (FOIS). There were no statistically significant differences in functional oral intake scale scores between intervention and control group patients immediately after chemoradiation therapy (intervention group score 3 versus control group score 4). However, patients who performed prophylactic swallowing exercises had improved swallowing function at 3 and 6 months after chemoradiation therapy.

Johnson. N. W (2010) stated that treatment strategies for oral/ oesophageal/ laryngeal cancer includes surgical resection or organ preservation protocol and those who are unable to resume functional swallowing several treatment options are available including postural changes, sensory procedures, maneuvers, diet changes, physiologic exercise, and orofacial prosthetics. Used alone or in combination these options can be extremely successful in returning a patient to safe and efficient oral intake.

Eugenia Ricci, et.al., (2009) conducted a study to examine the effectiveness of swallowing exercises before and after surgery in patients undergoing subtotal laryngectomy. In 43 patients who underwent subtotal laryngectomy, patients received swallowing exercises only after surgery, patients scheduled for subtotal laryngectomy also received some sessions of swallowing exercises before surgery. The difference between the two groups was significant on student's *t* test ($P < 0.001$) and shows that

preoperative rehabilitation is of significant help in the early resumption of normal swallowing.

Maggie Lee Huckabee (2009) conducted a retrospective analysis study to examine the functional and physiologic outcomes of treatment with swallowing exercises in a group of 10 patients with chronic dysphagia. Patient questionnaires was used to gain information regarding medical history, site of lesion, prior interventions and patient perception of swallowing recovery. The treatment modality included the completion of 10 hours of treatment in the first week of intervention. 8 out of the 10 patients were able to return to full oral intake with maintained gains in swallowing function, whereas two demonstrated no long term change in functional swallowing.

Conceptual Framework

Concept is an abstract or general idea inferred or derived from specific instances or occurrences, a notion or statement of an idea expressing how something might be done or accomplished that may lead to an accepted procedure (Kernerman Webster, 2005)

Miles and Huberman (1994) defined Conceptual framework as a visual or written product, one that explains graphically or in a narrative form, the main things to be studied, the key factors, concepts or variables and the presumed relationship among them.

Fawcett (1997) suggests that conceptual frameworks can be used for the purpose to guide practice, as a basis for research projects and in administrative situations.

The present study was aimed at assessing the effectiveness of swallowing exercises on level of dysphagia among patients with oral/ oesophageal/ laryngeal cancer at Ashwin Hospital, Coimbatore.

The investigator adopted modified J.W.Kenny's open system model as a basis for conceptual framework. According to J.W.Kenny, all living system is open and they are in continuous exchange of matter, energy and information which results varying degree of interactions with environment from the system receives inputs and give back the output in the form of matter, energy and information. System model consists of three phases input, throughput and output.

Input

Based on the J.W.Kenny, matter, energy and information are from the environment. In present study, environment refers to the hospital and input refers to the assessment of the dysphagia using the Waxman's modified dysphagia rating scale, collecting the demographic data from the cancer patients.

Throughput

According to J.W.Kenny, the matter, energy and information are continually processed through the system, which is called complex transformation, known as throughput. Process is the use of input that is energy and information for the maintenance of system. In this study the process include performing the swallowing exercise to reduce the dyspahgia among patients with oral/ oesophageal/ laryngeal cancer at Ashwin Hospital.

Output

J.W.Kenny noted after processing the input, the system returns to output in an altered state. Change is a feature of the process that is observable and measurable as output which should be different from that which is entered into the system. In this study the output reveals that the swallowing exercise is effective on the level of dysphagia among cancer patients.

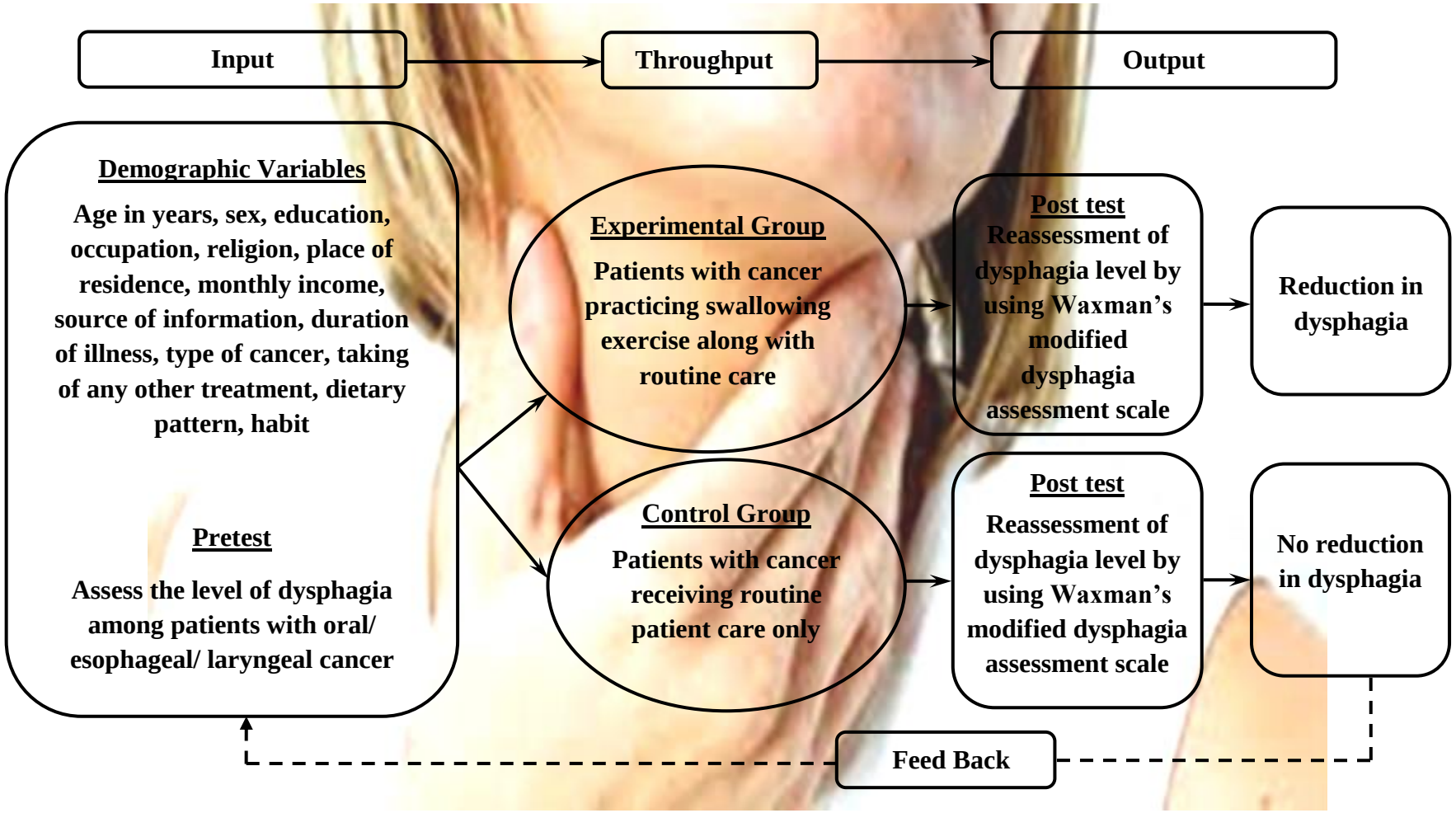

Figure. 1 Modified Conceptual Framework Based on Modified J. W. Kenny's Open System Model (1969)

CHAPTER - III

Methodology

This chapter includes the research approach, research design, setting of study, population, sample size, sampling technique, criteria for the selection of the sample, data collection procedure and plan for data analysis.

Research Approach

Quantitative research approach was selected to assess the effectiveness of swallowing exercises on the level of dysphagia among patients with oral /oesophageal /laryngeal cancer at Ashwin Hospital, Coimbatore.

Research Design

Pretest post-test control group only design, a subtype of quasi experimental research was adopted for the present study.

E	O_1	X	O_2
C	O_1	-	O_2

E - Experimental group

C - Control group

O_1 - Pretest

O_2 - Post test

X - Swallowing Exercises for experimental group

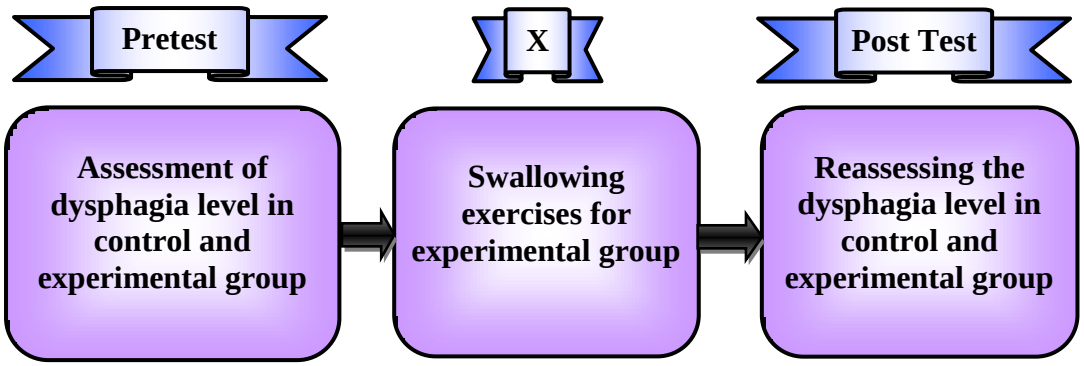

Figure. 2 The Schematic Representation of Research Design

Setting of the Study

The study was conducted among patients with oral/ oesophageal/ laryngeal cancer who were admitted in Ashwin Hospital, Coimbatore, which is situated 7 kilometers away from PPG College of Nursing. It is a 350 bedded multispecialty hospital equipped with inpatient and outpatient unit.

Variables

Independent variable was swallowing exercise and the dependent variable was the level of dysphagia among patients with oral / oesophageal / laryngeal cancer. The influencing variable were demographic variables such as age in years, sex, education, occupation, place of residence, monthly income, source of information, duration of illness, type of cancer, other treatment, dietary pattern and habit.

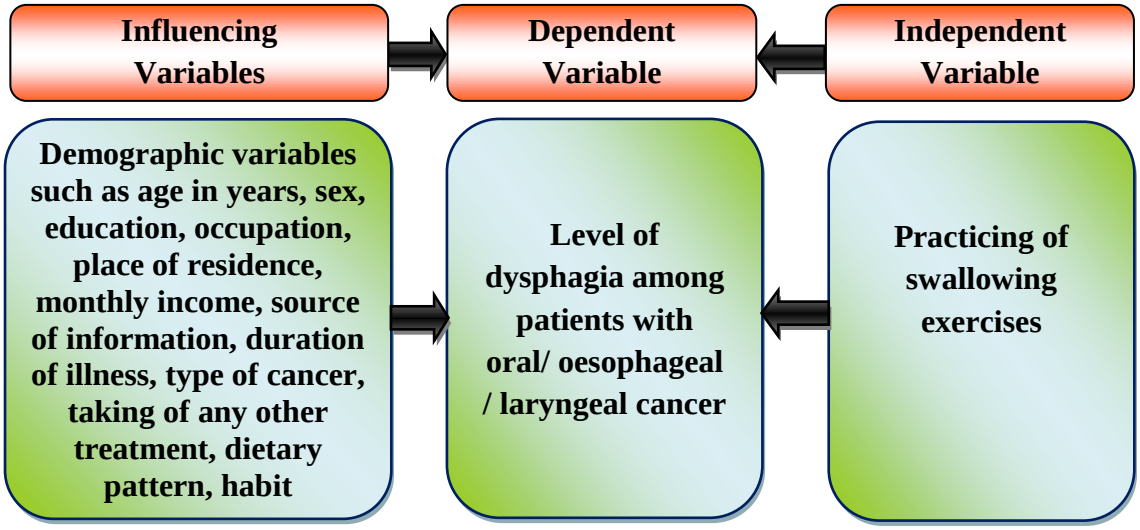

Figure. 3 The Schematic Representation of Variables

Population

The accessible population included patients who were having oral/ oesophageal / laryngeal cancer in Ashwin Hospital, Coimbatore.

Sample Size

The sample size was 40 out of which 20 patients were in experimental group and the rest 20 patients were in control group.

Sampling Technique

Non probability convenient sampling technique was used for selecting the sample.

Criteria for the Selection of Sample

Inclusive Criteria

- Both male and female patients
- Patients who are diagnosed as having oral/ oesophageal / laryngeal cancer
- The patients who are in the age group between 20 – 80 years
- Patients who are experiencing dysphagia
- Patients who are willing to participate
- Patients who are able to follow instructions
- Patients who are newly diagnosed as cancer

Exclusion Criteria

- Patients who are critically ill
- Patients having complications of cancer eg. oral ulcers/ polyps, severe pain

- Patients who are having tracheostomy
- Patient who are on endotracheal intubation
- Patients who already know about swallowing exercises

Description of the Tool

Section – A Demographic Variables

Distribution of baseline variables like age, sex, education, occupation, place of residence, monthly income, source of information, duration of illness, type of cancer, other treatment, dietary pattern and personal habits.

Section - B Waxman's Modified Dysphagia Assessment Scale

It is a 5-point Likert Scale which consists of five equal divisions 1, 2, 3, 4, 5. The dysphagia intensity was a subjective experience and the difference between the minimum dysphagia and maximum dysphagia could be measured objectively with equally divided numerical digits.

The Categories are as Follows

Levels	Criteria	Score
Level 1	Profound Dysphagia	1
Level 2	Severe Dysphagia	2
Level 3	Moderate Dysphagia	3
Level 4	Mild Dysphagia	4
Level 5	Normal Swallowing	5

Testing of Tool

Content Validity

The tool was given to five experts in the field of medical surgical nursing and oncology department. All the comments and suggestions given by the experts were dully considered and corrections were made.

Reliability

The reliability of tool was established by test retest method and the score obtained was 0.9.

Pilot Study

The pilot study was conducted to make sure that the tool was capable of eliciting response from the respondents. Pilot study was conducted among 4 patients, two patients each for control and experimental group. The study was conducted at Ashwin Hospital, Coimbatore for a period of one week. The report showed that there was a decrease in dysphagia. The result showed that the tool was feasible.

Data Collection Procedure

The formal permission was obtained from Medical Director of Ashwin Hospital, to conduct the study. Confidentiality and anonymity of the subjects was maintained. The study was carried out for a period of one month from 01- 01-2014 to 31-01-2014. The samples were selected by using non probability convenient sampling. The patients who fulfilled the criteria were considered as sample. The purpose of the study was explained to the patients to ensure their cooperation. The first 20 samples were considered as control group and the next 20 samples considered as experimental group.

At first control group samples were selected, pretest was conducted and demographic data was colleted by using baseline perfoma and the level of dyphagia was assessed by using Waxman's modified dysphagia assessment scale during the first day of data collection. Regular activities were carried out by them for the next 1 week. Simultaneously pretest was conducted in the experimental group. The demographic data was collected by using a baseline performa and the level of dysphagia was assessed by using Waxman's modified dysphagia assessment scale. During the second day of data collection, swallowing exercises were demonstrated to the subjects. There are 6 exercises with various positions for duration of 30 minutes and each exercise was done for 5 minutes. After that the subjects performed the exercise in the morning for a period of one week. By the end of the week, post test was conducted in both the groups using the same scale.

Plan for Data Analysis

The investigator adopted descriptive and inferential statistics to analyze the data. The demographic variables were analyzed by using frequency and percentage. The effectiveness of swallowing exercises and association between variables were analyzed by using independent 't' test and χ^2 test.

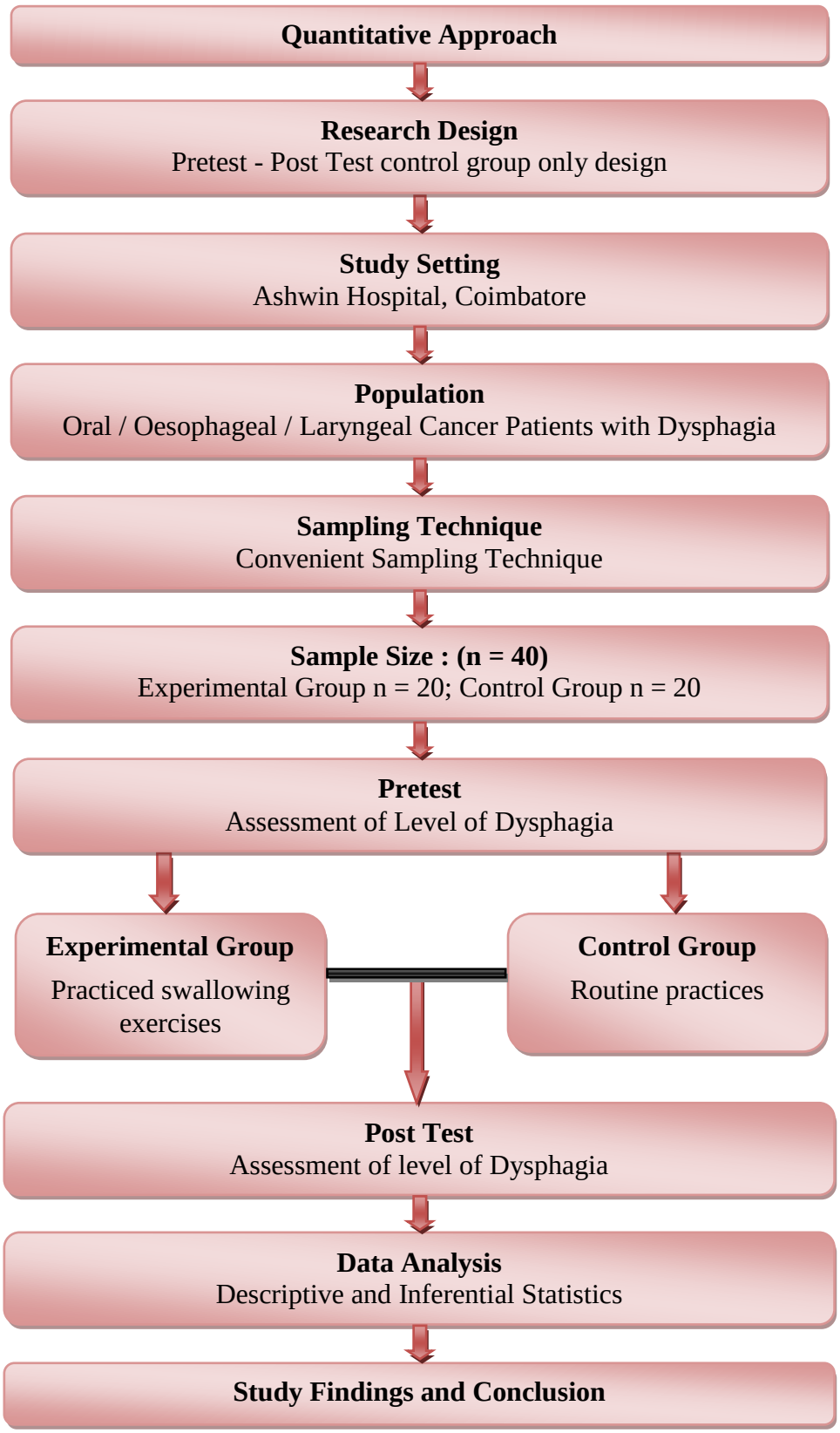

Figure. 4 The Overall View of Research Methodology

CHAPTER – IV

Data Analysis and Interpretation

This chapter deals with analysis and interpretation of the data collected from patients with dysphagia, to assess the effectiveness of swallowing exercises on level of dysphagia.

The finding of this study is based on the descriptive and inferential statistics analysis was presented under the following findings.

Section – I: Description of demographic variables of patients with oral / oesophageal / laryngeal cancer in control group and experimental group.

Section – II: Description of statistical values of dysphagia level of subjects In control group and experimental group.

a) Distribution of frequency and percentage of severity of dysphagia in control and experimental group.
b) Comparison of pretest and post test dysphagia level of subjects in experimental group.
c) Comparison of dysphagia level in control group and experimental group before performing swallowing exercise.
d) Comparison of dysphagia level in control group and experimental group after performing swallowing exercise.

Section – III: Association of selected demographic variables with pretest scores of subjects in experimental group.

SECTION – I

Table. 1 Description of Demographic Variables of Patients with Oral/ Oesophageal/ Laryngeal Cancer in Control and Experimental Group

(n = 40)

S.No.	Demographic Variable	Control Group (n = 20)		Experimental Group (n = 20)	
		f	%	f	%
1.	**Age in years**				
	a) 21 – 30 years	1	5	2	10
	b) 31 – 40 years	4	20	4	20
	c) 41 – 50 years	6	30	5	25
	d) Above 50 years	9	45	9	45
2.	**Sex**				
	a) Male	11	55	10	50
	b) Female	9	45	10	50
3.	**Education**				
	a) Illiterate	6	30	5	25
	b) Primary	6	30	4	20
	c) Secondary	3	15	5	25
	d) Higher Education and above	5	25	6	30
4.	**Occupation**				
	a) Unemployed	0	0	0	0
	b) Business	7	35	8	40
	c) Labour	7	35	5	25
	d) Professional	6	30	7	35

(Table 1 continues)

(Table 1 continued)

S.No.	Demographic Variable	Control Group (n = 20)		Experimental Group (n = 20)	
		f	%	f	%
5.	**Place of residence**				
	a) Rural	14	70	10	50
	b) Urban	6	30	10	50
6.	**Monthly Income**				
	a) ₹. 5000 – 7000	9	45	7	35
	b) ₹. 7001- 9000	4	20	5	25
	c) ₹. 9001 – 10,000	4	20	5	25
	d) ₹. 10,000 and above	3	15	3	15
7.	**Source of information**				
	a) Patient	9	45	9	45
	b) Family members	10	50	11	55
	c) Friends	1	5	0	0
	d) Health professional	0	0	0	0
8.	**Duration of illness**				
	a) Newly diagnosed	18	90	17	85
	b) 1 – 3 years	2	10	3	15
	c) 3 years one month – 6 years	0	0	0	0
	d) 6 years and above	0	0	0	0

(Table 1 continues)

(Table 1 continued)

S.No.	Demographic Variable	Control Group (n = 20)		Experimental Group (n = 20)	
		f	%	f	%
9.	**Type of cancer**				
	a) Oesophageal	8	40	6	30
	b) Laryngeal	4	20	4	20
	c) Oral	4	20	7	35
	d) Oropharyngeal	4	20	2	10
	e) Others	0	0	1	5
10.	**Any other treatment**				
	a) Chemotherapy	6	30	7	35
	b) Radiation therapy	6	30	5	25
	c) Both	8	40	8	40
11.	**Dietary Pattern**				
	a) Vegetarian	4	20	4	20
	b) Non vegetarian	16	80	16	80
12.	**Habit**				
	a) Smoking	3	15	4	20
	b) Alcoholism	5	25	3	15
	c) Betel nut chewing	6	30	5	25
	d) Nil	6	30	8	40

Table 1 shows the description of demographic variables of control and experimental group

- Among the respondents, 1(5%) was in the age group of 21 – 30 years, 4(20%) were between 31 – 40 years, 6(30%) were in the age group of 41 – 50 years, and 9(45%) were above 50 years in the control group, 2(10%) was in the age group of 21 – 30 years, 4(20%) were between 31 – 40 years, 5(25%) were between 41 – 50 years, 9(45%) were above 50 years of age in the experimental group.

- Regarding the sex of respondents, 11(55%) were male and 9(45%) were female in the control group, 10(50%) were male and 10(50%) were female in the experimental group.

- With regard to the educational status, 6(30%) were illiterate, 6(30%) had primary education, 3(15%) had secondary education, 5(25%) had higher education and above in control group, 5(25%) were illiterate, 4(20%) had primary education, 5(25%) had secondary education, 6(30%) has higher education and above in experimental group.

- Regarding the occupation, 7(35%) had business, 7(35%) were labourers and 6(30%) were professionals in the control group, 8(40%) had business, 5(25%) were labourers and 7(35%) were professionals in the experimental group.

- Regarding the place of residence, 14(70%) were residing in the rural areas, 6(30%) in urban area in the control group, 10(50%) were residing in the rural areas, 10(50%) in urban area in the experimental group.

- Regarding monthly income, 9(45%) had monthly income between the range of ₹. 5001 – 7000 per month, 4(20%) were between the range of ₹. 7001 – 9000 per month, 4(20%) had monthly income 9001 – 10,000 and 3(15%) had above ₹. 10,000 per month in control group, 4(20%) had monthly income between the range of ₹. 5001- 7000 per month, 1(5%) were between the range of ₹. 7001 – 9000 per month, 1(5%) had monthly income ₹. 9001 – 10,000 and 2(10%) had above ₹. 10,000per month income in experimental group.

- Regarding the source of information, 9(45%) was from patient, 10(50%) was from patients family members, 1(5%) was from friends in control group, 9(45%) was from patients, 11(55%) was from patients family members in experimental group.

- About duration of illness, 18(90%) was newly diagnosed, 2(10%) was between the range of 1 – 3 years duration in control group, 17(85%) was newly diagnosed, 3(15%) was between the range of 1 – 3 years duration in experimental group.

- On considering the type of cancer, 8(40%) had oesophageal cancer, 4(20%) had laryngeal cancer, 4(20%) had oral cancer, 4(20%) had oropharyngeal cancer in the control group, 6(30%) had oesophageal cancer, 4(20%) had laryngeal cancer, 7(35%) had oral cancer, 2(10%) had oropharyngeal cancer in the experimental group.

- Regarding use of other treatment, 6(30%) was on chemotherapeutic treatment, 6(30%) was on radiation therapy, 8(40%) was on both in the control group, 7(35%) was on chemotherapeutic treatment, 5(25%) was on radiation therapy, 8(40%) was on both in experimental group.

- With regard to dietary pattern, 4(20%) were vegetarians, 16(80%) were non vegetarians in control group and also in experimental group.

- Considering the personal habits, 3(15%) had the habit of smoking, 5(25%) had alcoholism, 6(30%) had the habit of betel nut chewing and 6(30%) had none of the personal habits in control group, 4(20%) had the habit of smoking, 3(15%) had alcoholism, 5(25%) had the habit of betel nut chewing and 8(40%) had none of the personal habits in control group

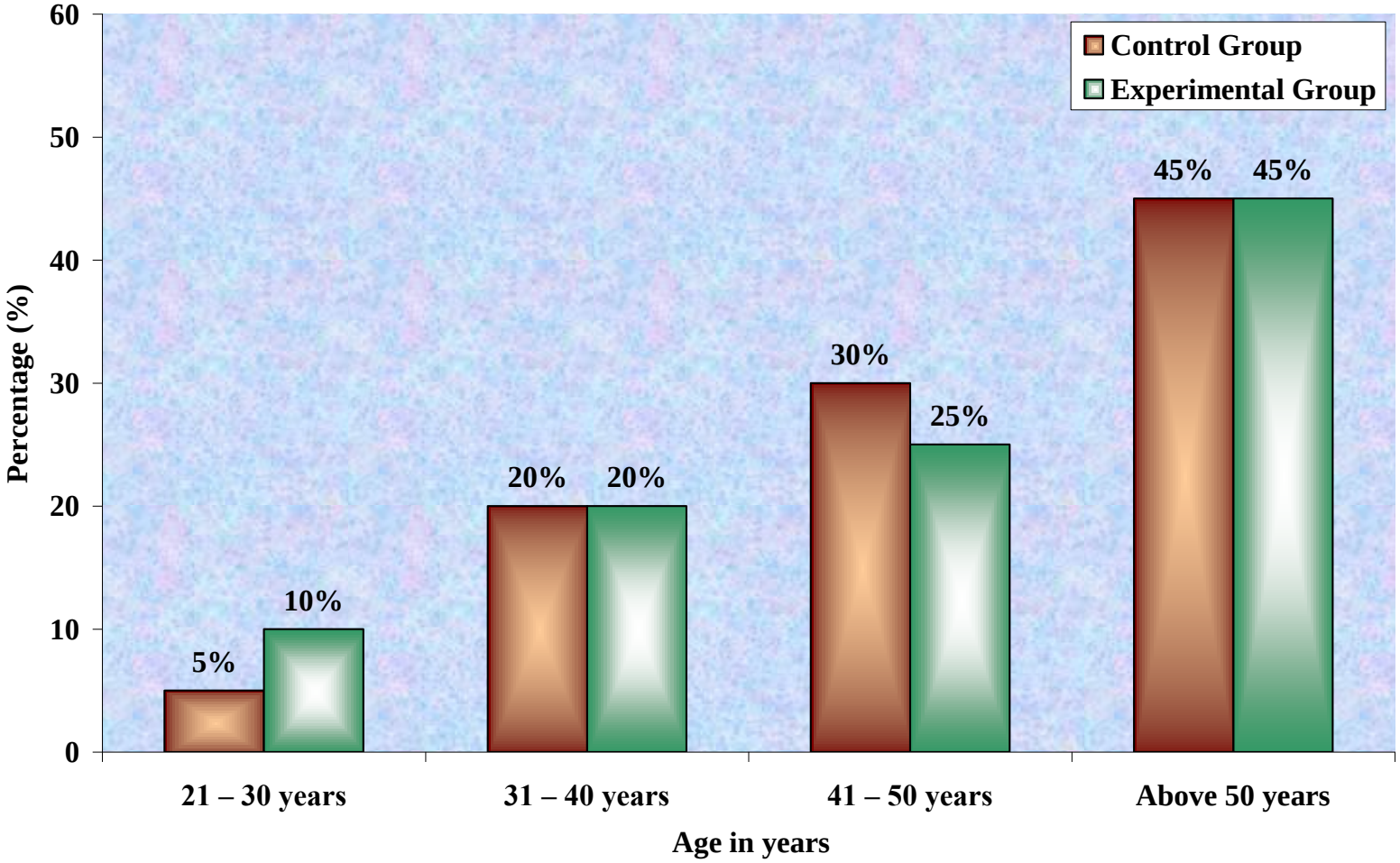

Figure. 5 Distribution of Demographic Variables According to the Age in the Control Group and Experimental Group

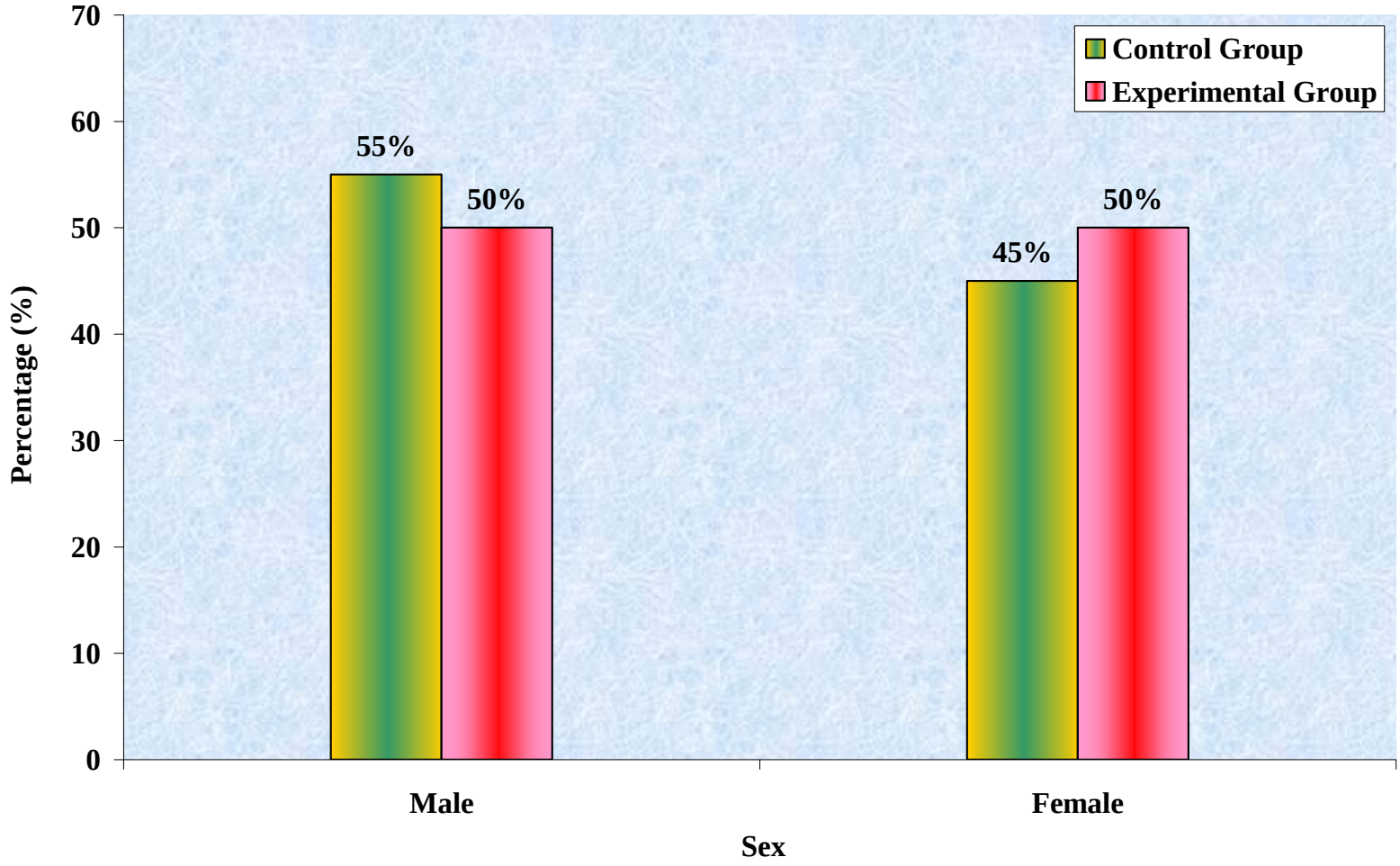

Figure. 6 Distribution of Demographic Variables According to the Sex in the Control Group and Experimental Group

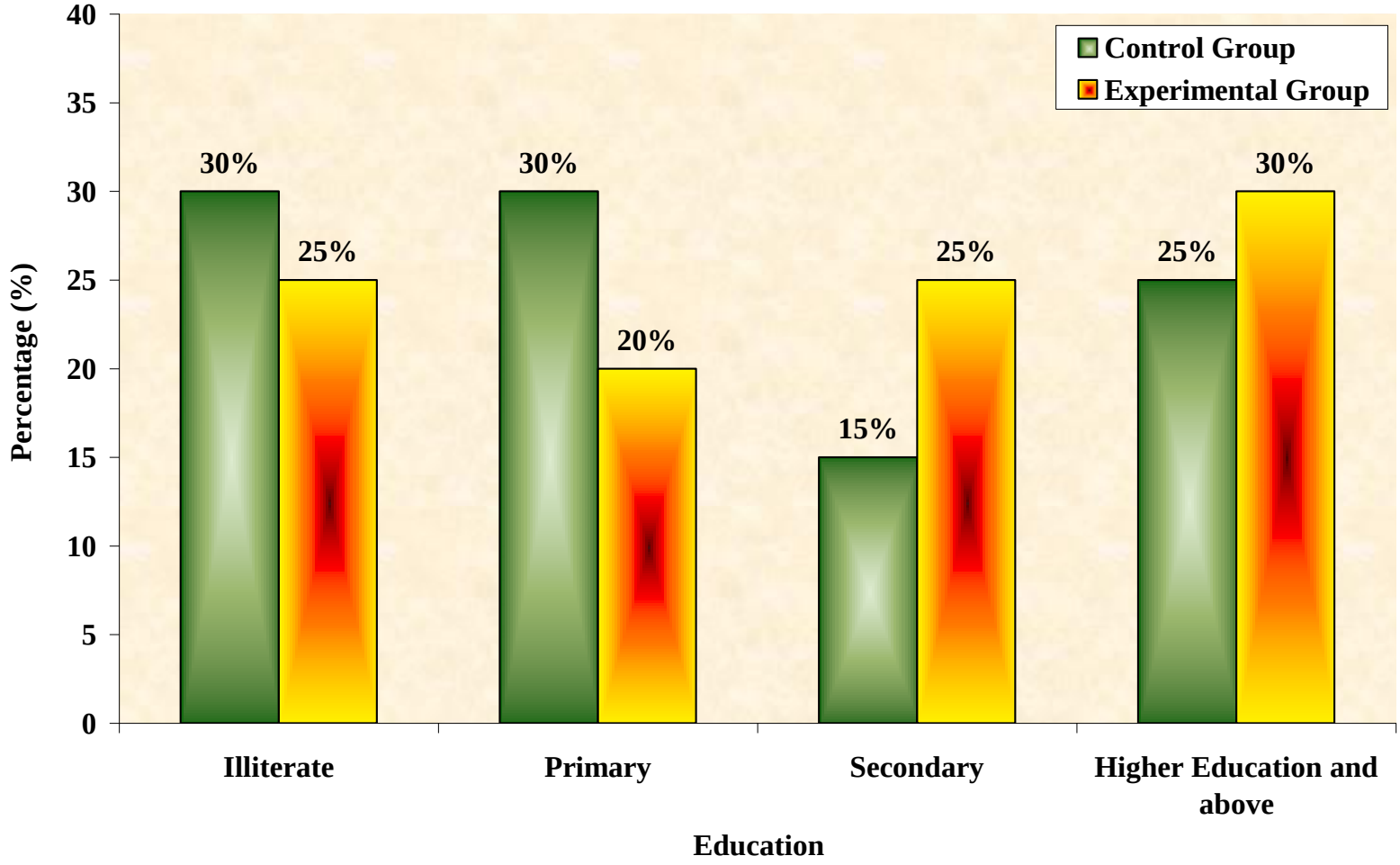

Figure. 7 Distribution of Demographic Variables According to the Education in the Control Group and Experimental Group

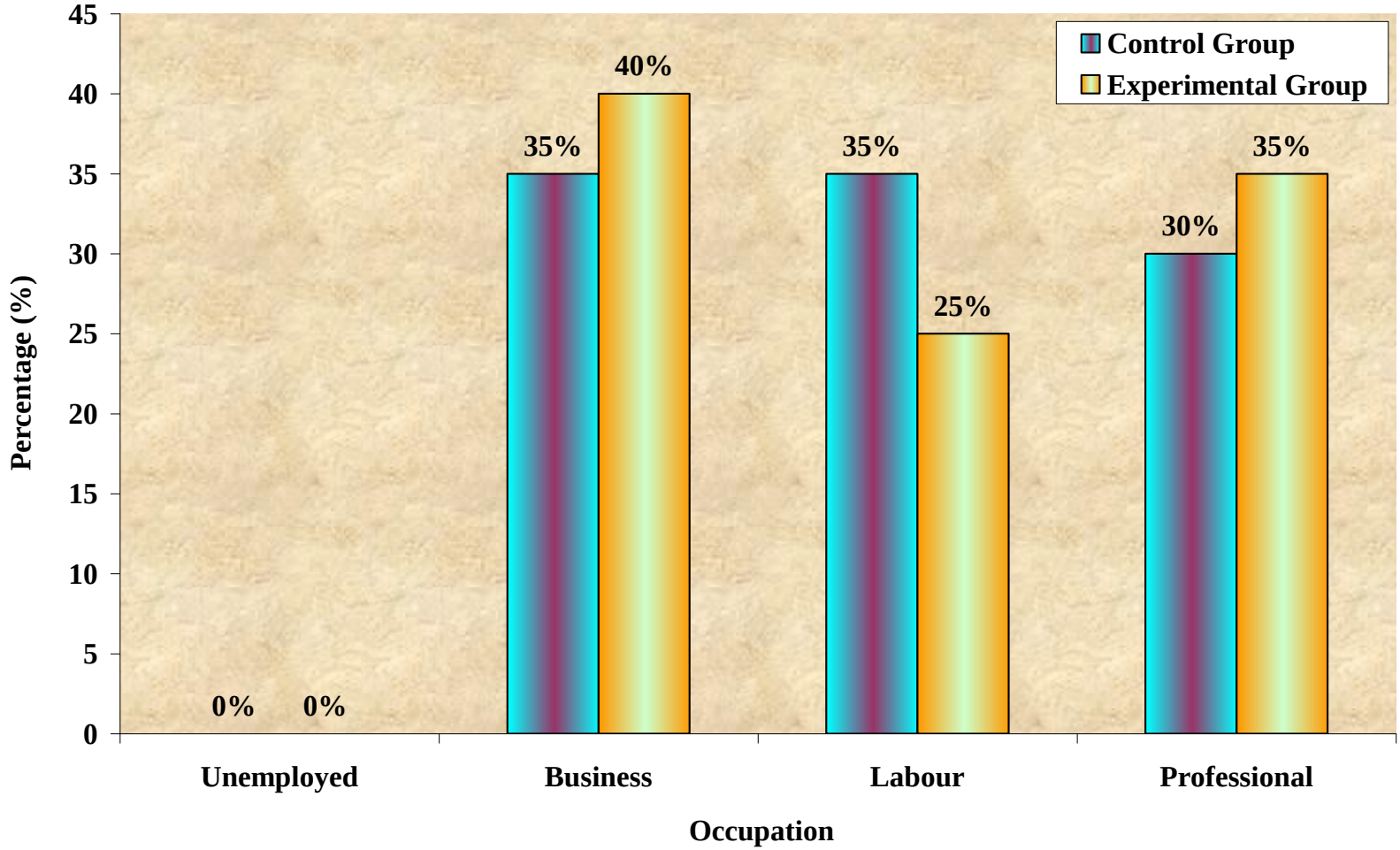

Figure. 8 Distribution of Demographic Variables According to the Occupation in the Control Group and Experimental Group

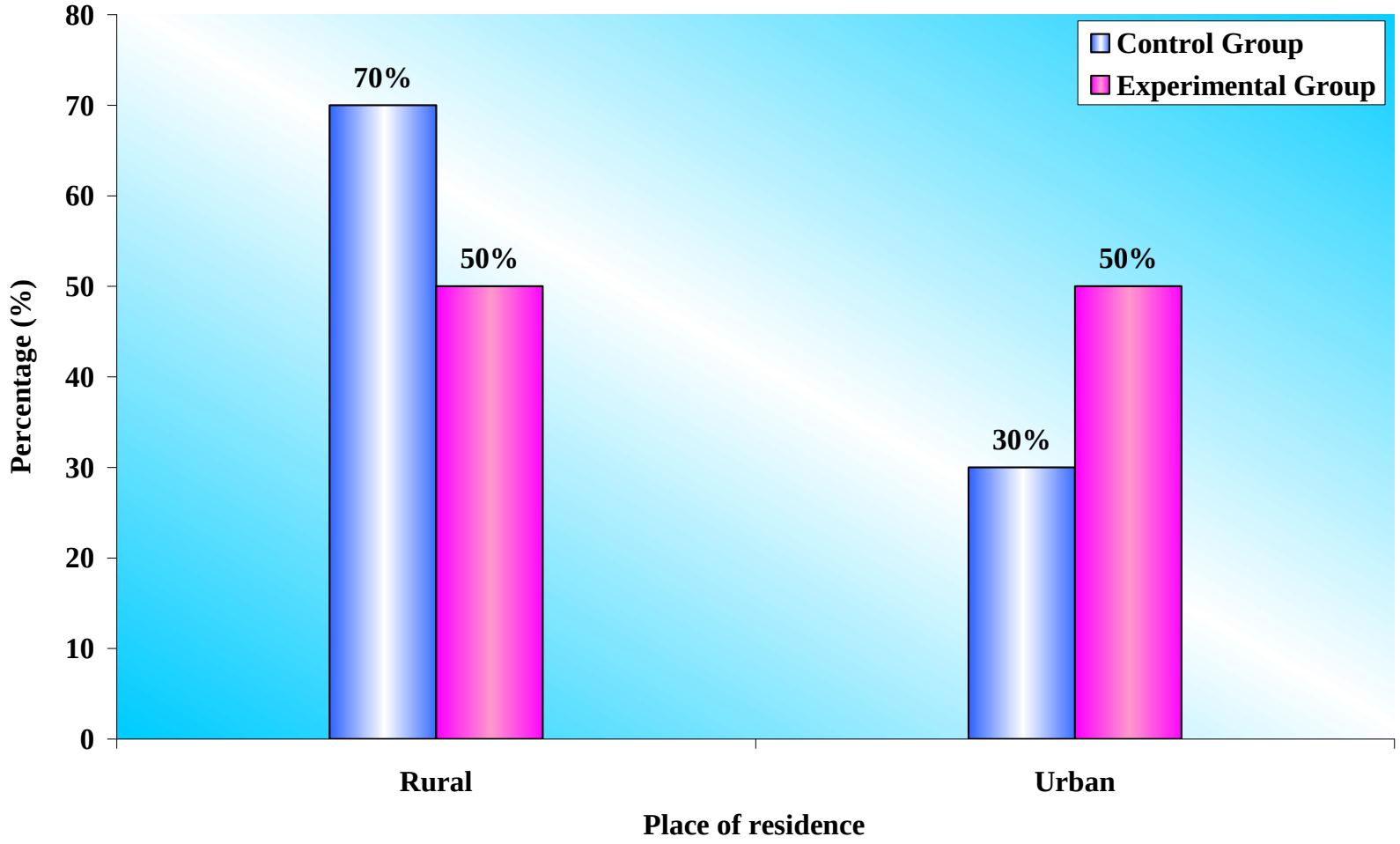

Figure. 9 Distribution of Demographic Variables According to the Place of Residence in the Control Group and Experimental Group

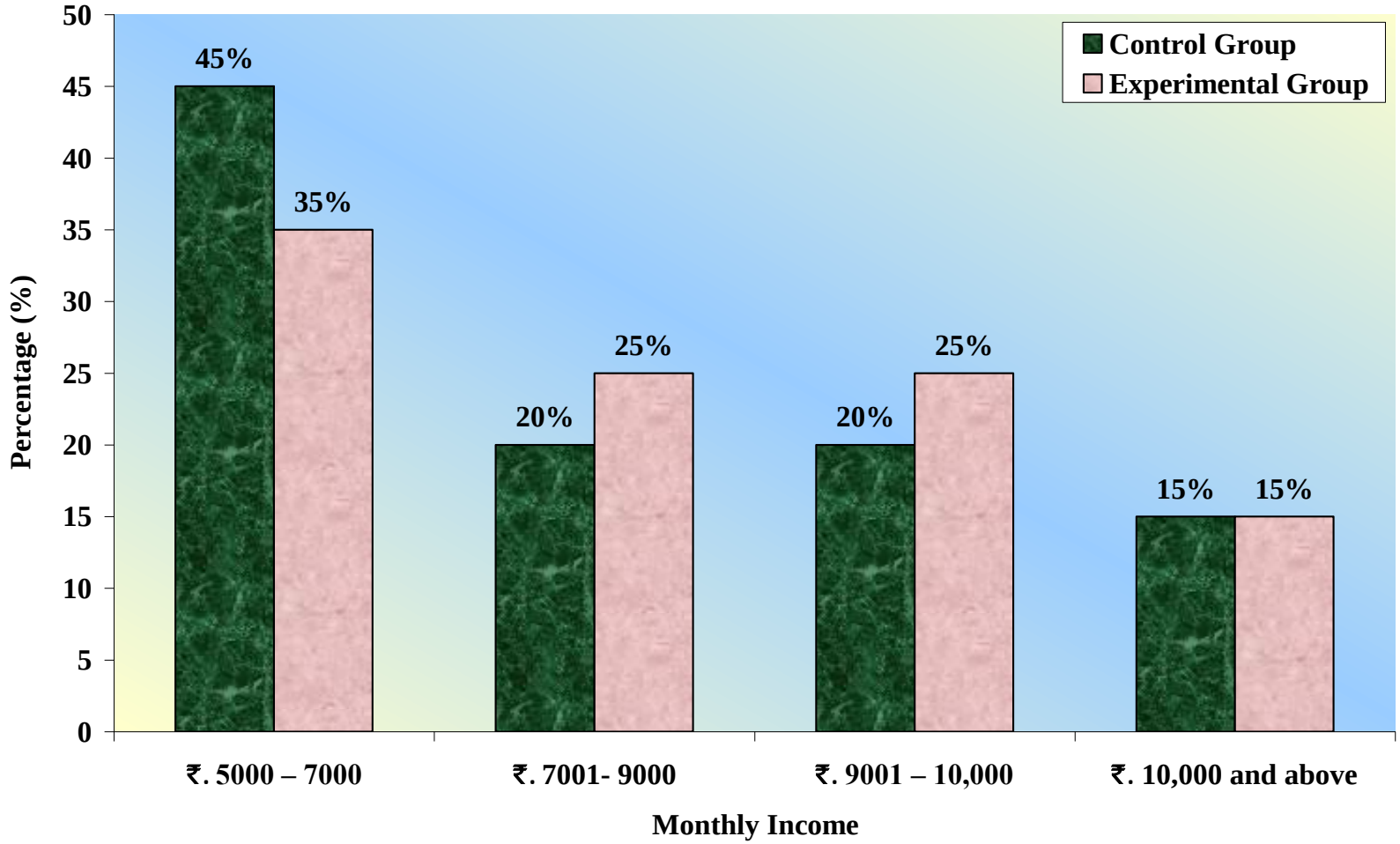

Figure. 10 Distribution of Demographic Variables According to the Monthly Income in the Control Group and Experimental Group

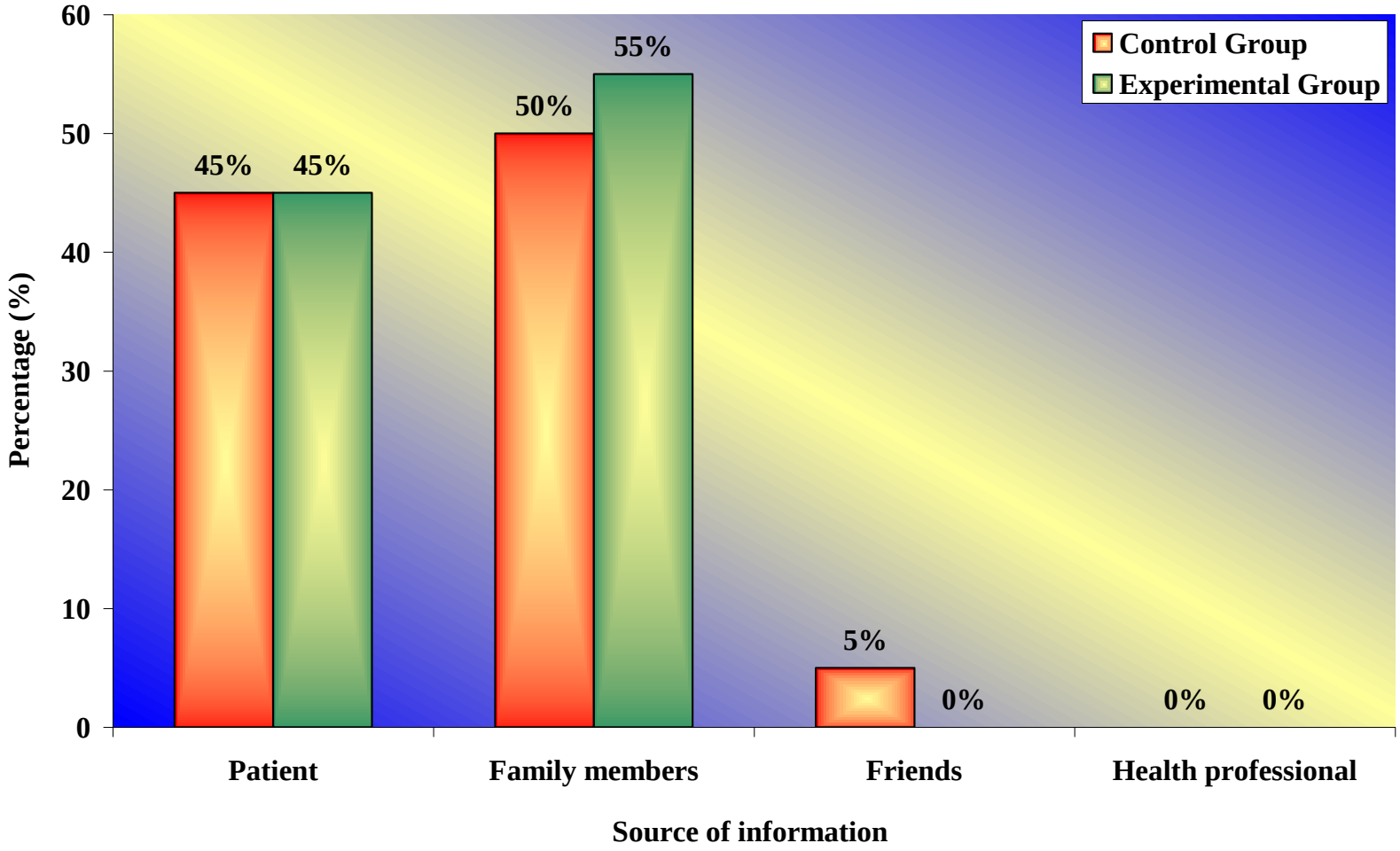

Figure. 11 Distribution of Demographic Variables According to the Source of Information in the Control Group and Experimental Group

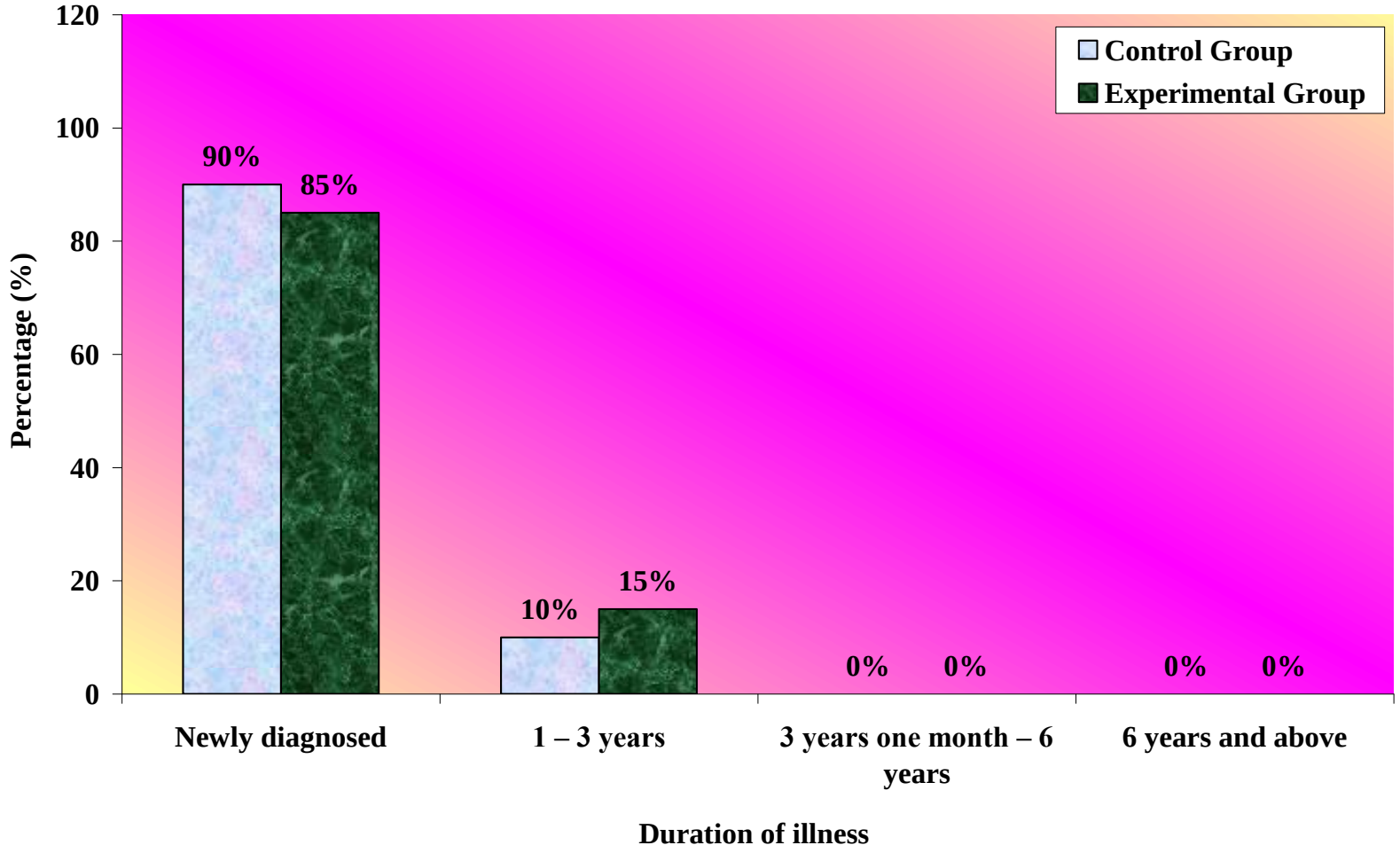

Figure. 12 Distribution of Demographic Variables According to the Duration of Illness in the Control Group and Experimental Group

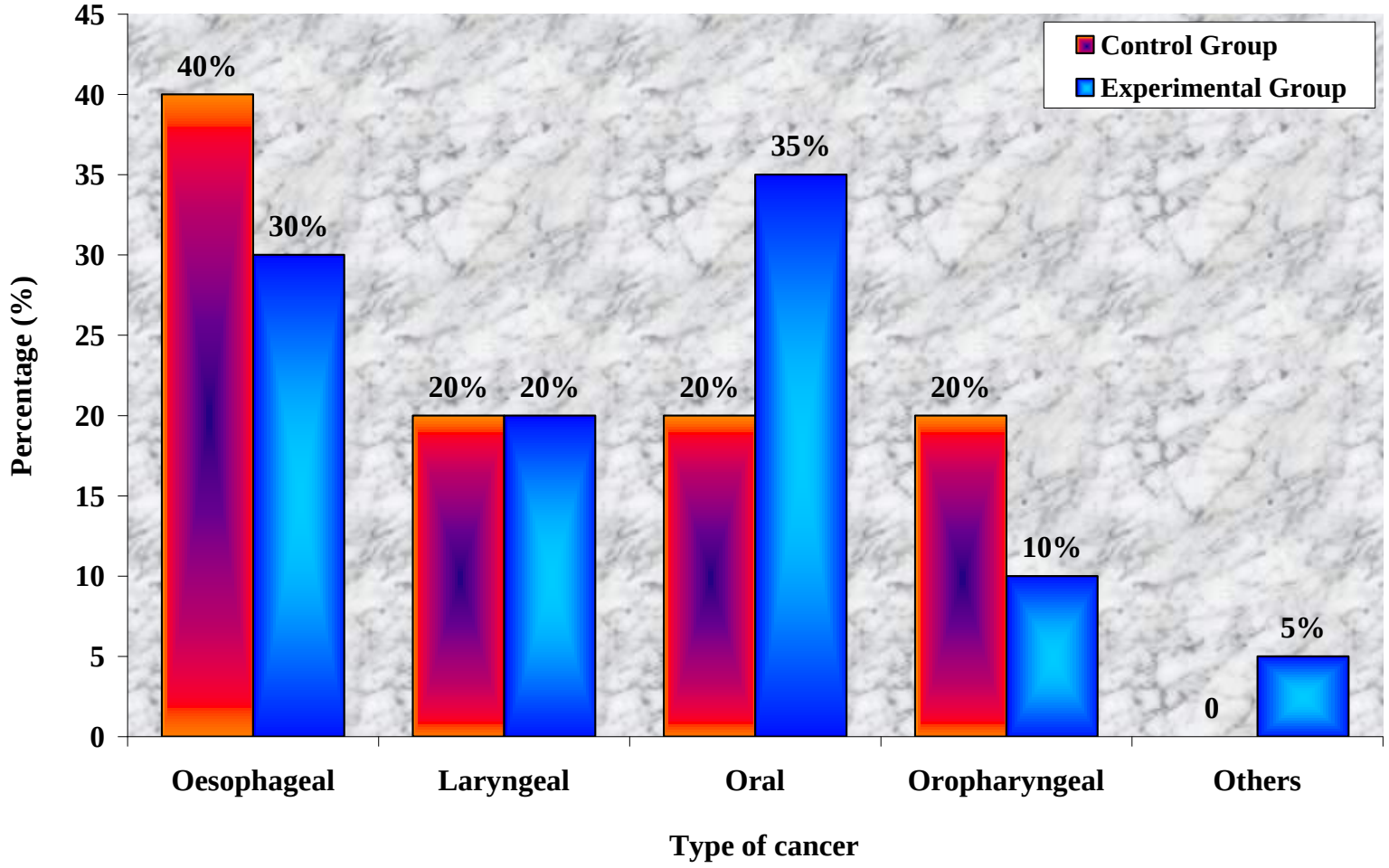

Figure. 13 Distribution of Demographic Variables According to the Type of Cancer in the Control Group and Experimental Group

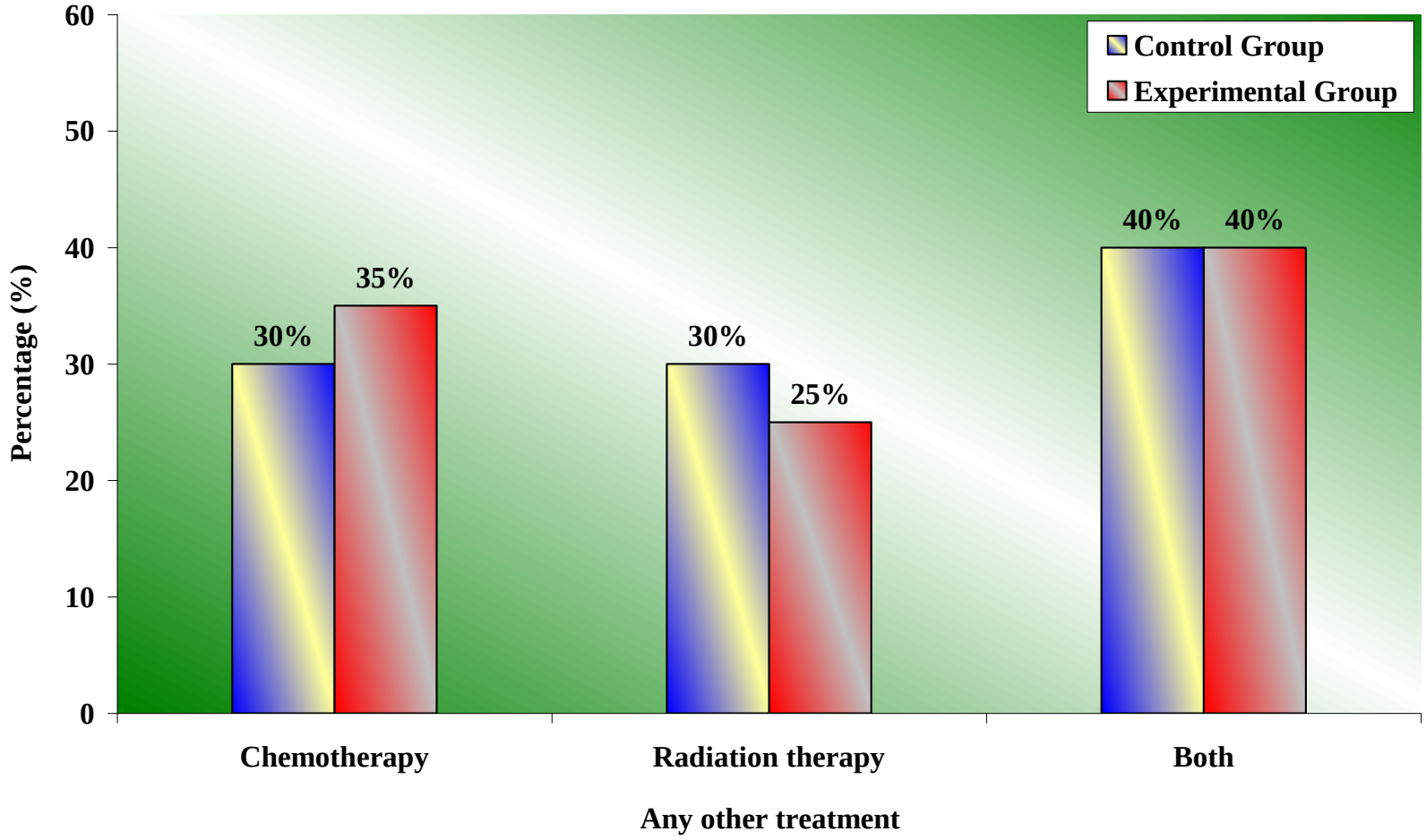

Figure. 14 Distribution of Demographic Variables According to the Other Treatment for Dysphagia in the Control Group and Experimental Group

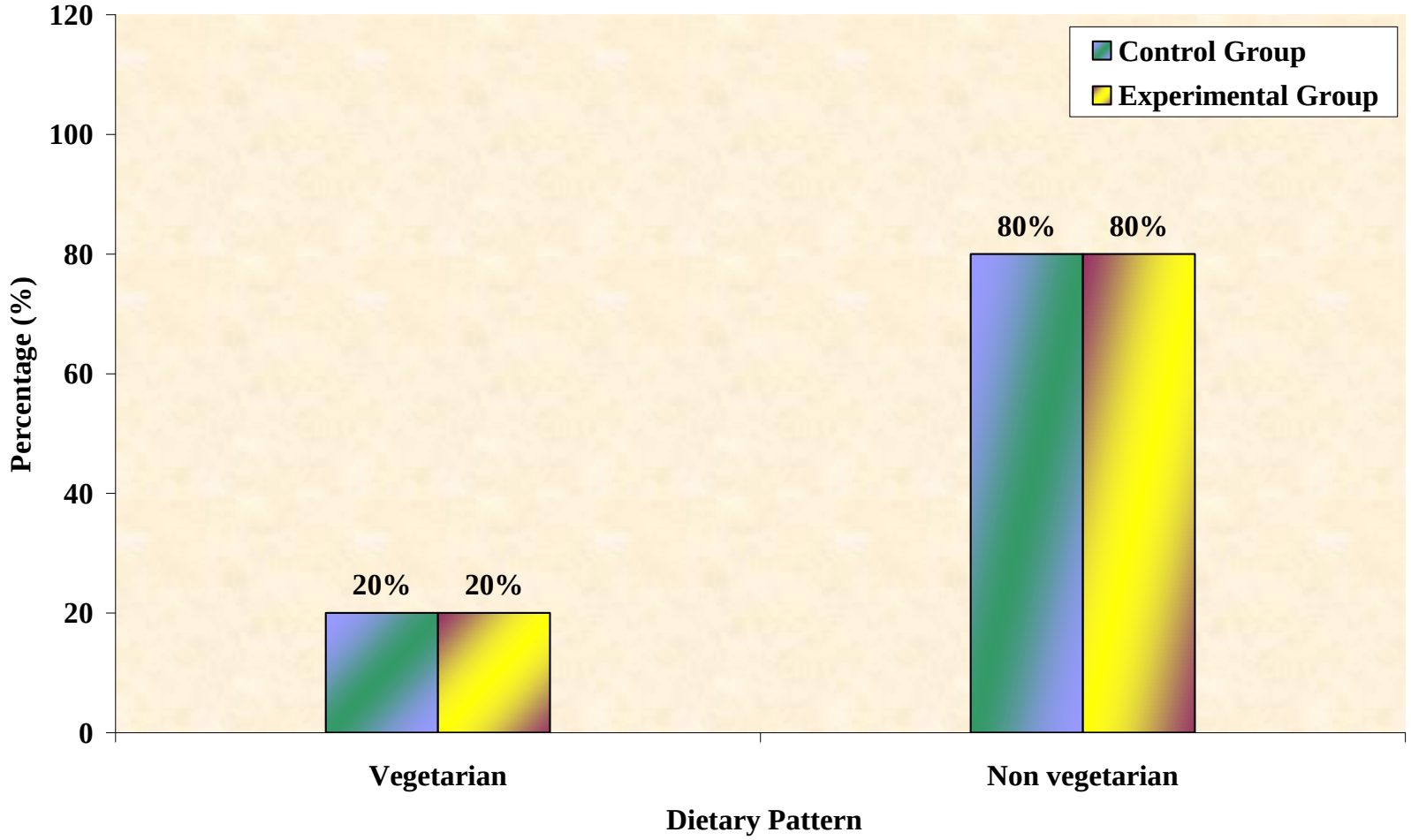

Figure. 15 **Distribution of Demographic Variables According to the Dietary Pattern in the Control Group and Experimental Group**

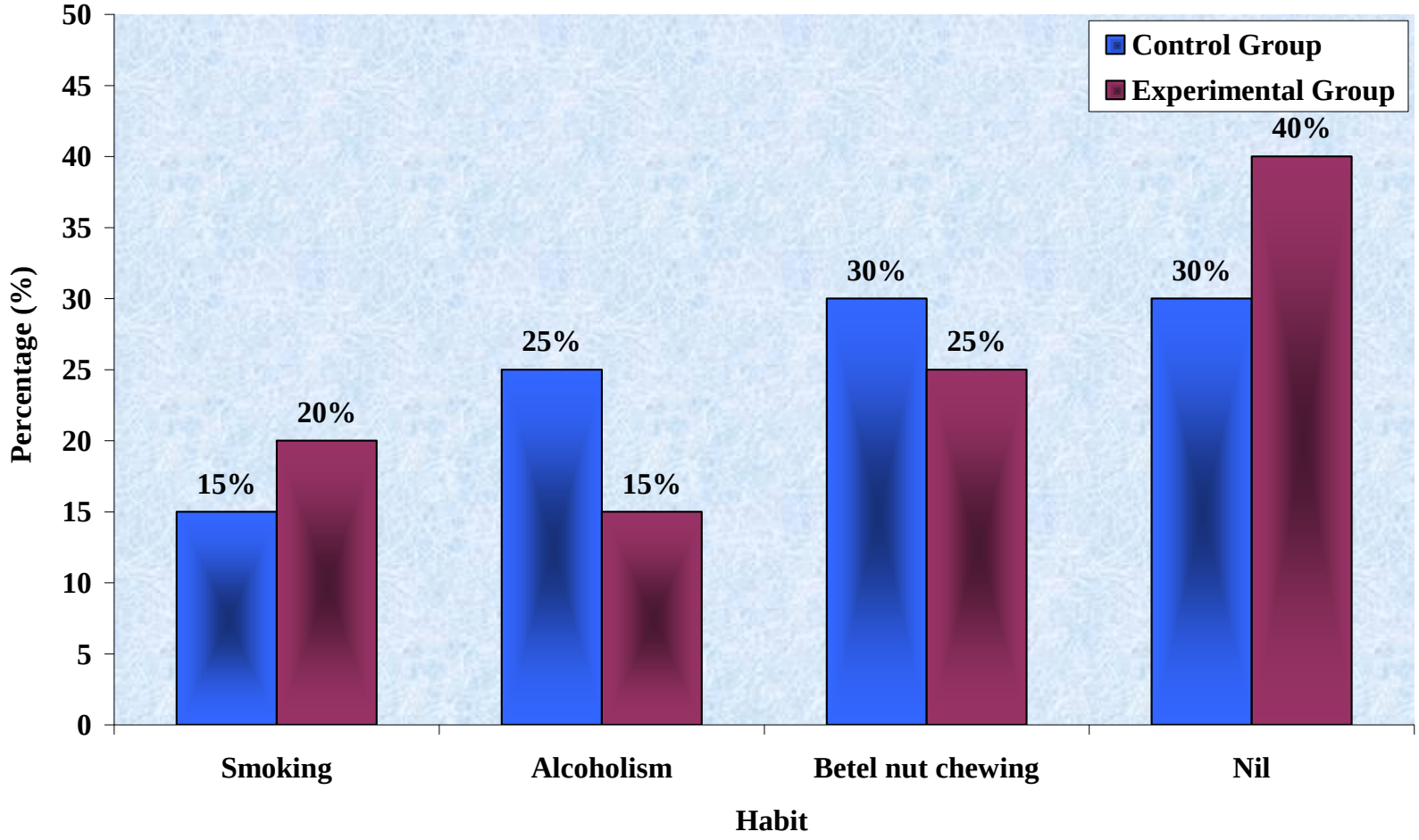

Figure. 16 Distribution of Demographic Variables According to the Habit in the Control Group and Experimental Group

SECTION – II

Description of Statistical Values of Dysphagia Level of Subjects in Control Group and Experimental Group

Table. 2 Distribution of Frequency and Percentage of Pretest Score of Dysphagia in Control and Experimental Group

(n = 40)

S.No.	Level of Dysphagia	Pretest			
		Control Group		Experimental Group	
		f	%	f	%
1.	Profound dysphagia	2	10	0	0
2.	Severe dysphagia	9	45	12	60
3.	Moderate dysphagia	7	35	5	25
4.	Mild dysphagia	2	10	3	15
5.	Normal swallowing	0	0	0	0

Table (2) shows distribution of frequency and percentage of pretest score of dysphagia in control and experimental group. In control group 2(10%) patients had profound dysphagia, 9(45%) had severe dysphagia, 7(35%) had moderate dysphagia, 2(10%) had mild dysphagia in pretest. In experimental group 12(60%) patients had severe dysphagia, 5(25%) had moderate dysphagia, 3(15%) had mild dysphagia in pretest.

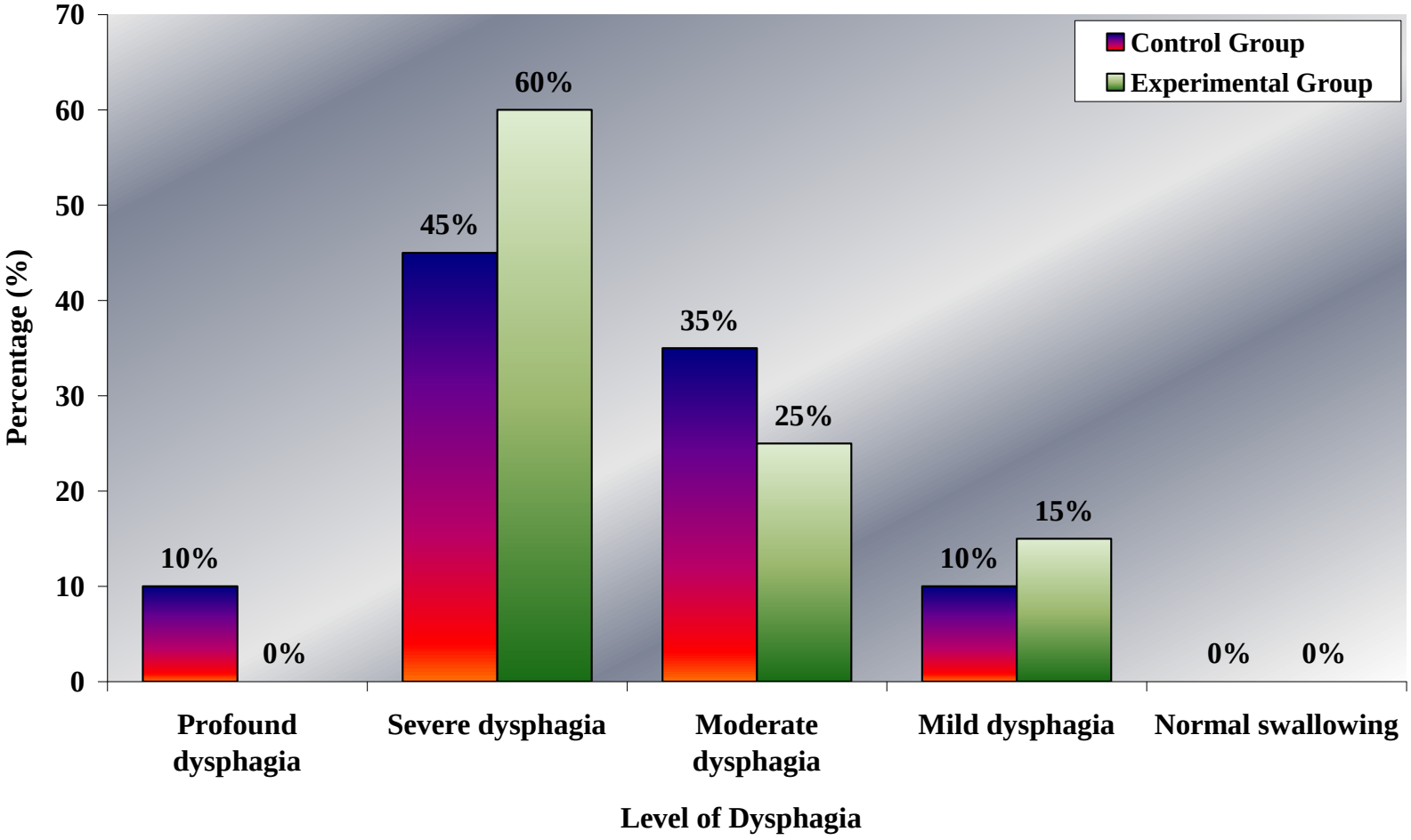

Figure. 17 Distribution of Pretest Percentage Score of Dysphagia in the Control Group and Experimental Group

Table. 3 Distribution of Frequency and Percentage of Post Test Score of Dysphagia in Control and Experimental Group

(n = 40)

S.No.	Level of Dysphagia	Post Test			
		Control Group		Experimental Group	
		f	%	f	%
1.	Profound dysphagia	2	10	0	0
2.	Severe dysphagia	10	50	2	10
3.	Moderate dysphagia	6	30	5	25
4.	Mild dysphagia	2	10	9	45
5.	Normal swallowing	0	0	4	20

Table (3) shows distribution of frequency and percentage of post test score of dysphagia in control and experimental group. In control group 2(10%) were having profound dysphagia, 10(50%) of them were having severe dysphagia , 6(30%) of them were having moderate dysphagia, 2(10%) were having mild dyspahgia during post test. In experimental group, 2(10%) of them were having severe dysphagia 5(25%) were having moderate dysphagia, 9(45%) were having mild dysphagia and 4(20%) of them were having normal swallowing in the post test.

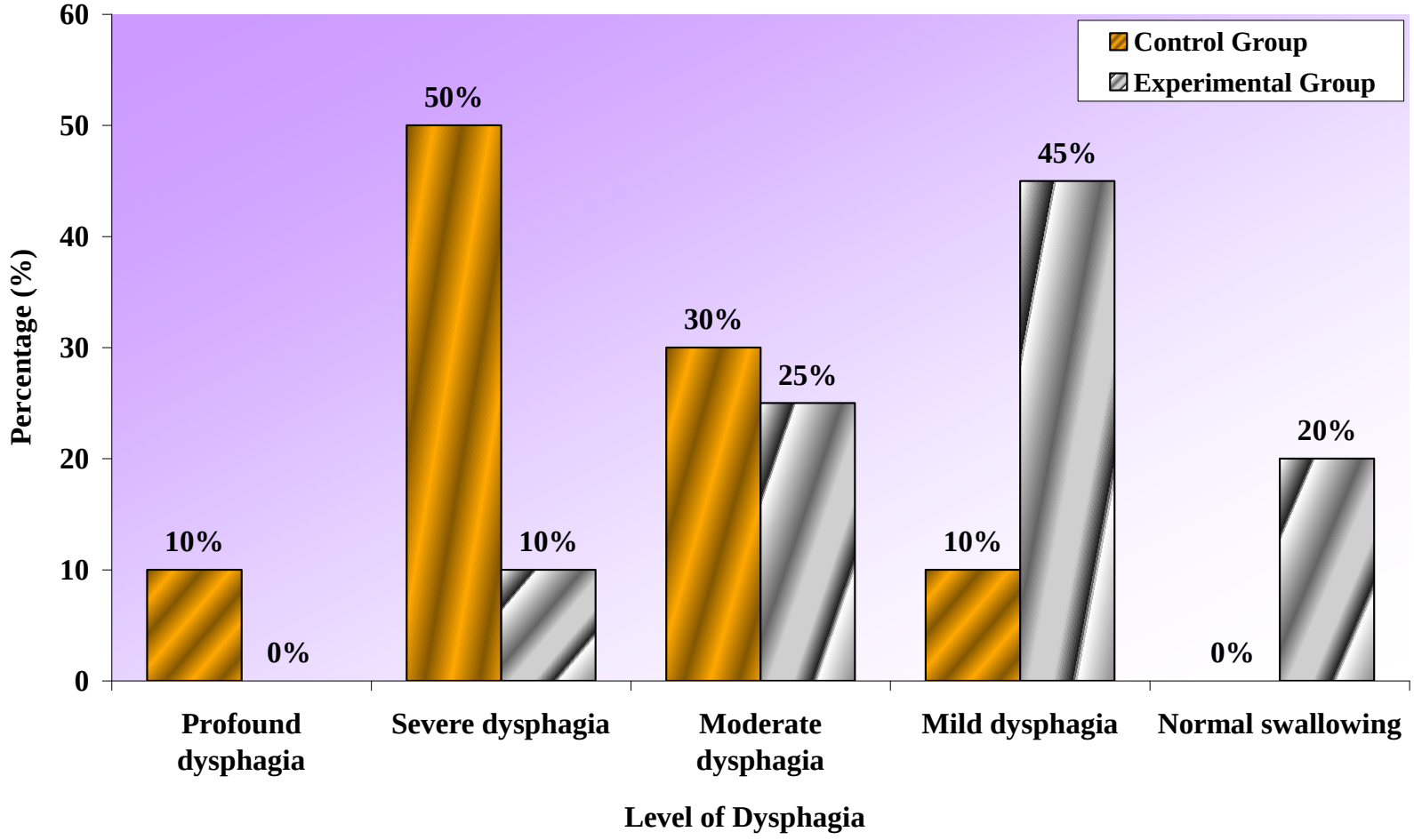

Figure. 18 Distribution of Post Test Percentage Score of Dysphagia in the Control and Experimental Group

Table. 4 Comparison of Pretest and Post Test Dysphagia Score of Subjects in Experimental Group

't' Test for the Mean Difference of Subjects in Experimental Group

(n = 20)

S.No.	Score of Dysphagia	Mean	SD	't' value
1.	Pretest	2.55	0.73	7.77*
2.	Post test	3.75	0.88	

* Significant

Table (4) shows for 19 degrees of freedom at 0.05 level of significance the calculated 't' value was 7.77, which is greater than the table value. Hence there is significant difference existing between pretest and post test value and dysphagia level. Based on the findings, the practice of swallowing exercise is effective intervention in reducing dysphagia among patients with oral/ esophageal/ laryngeal cancer in experimental group.

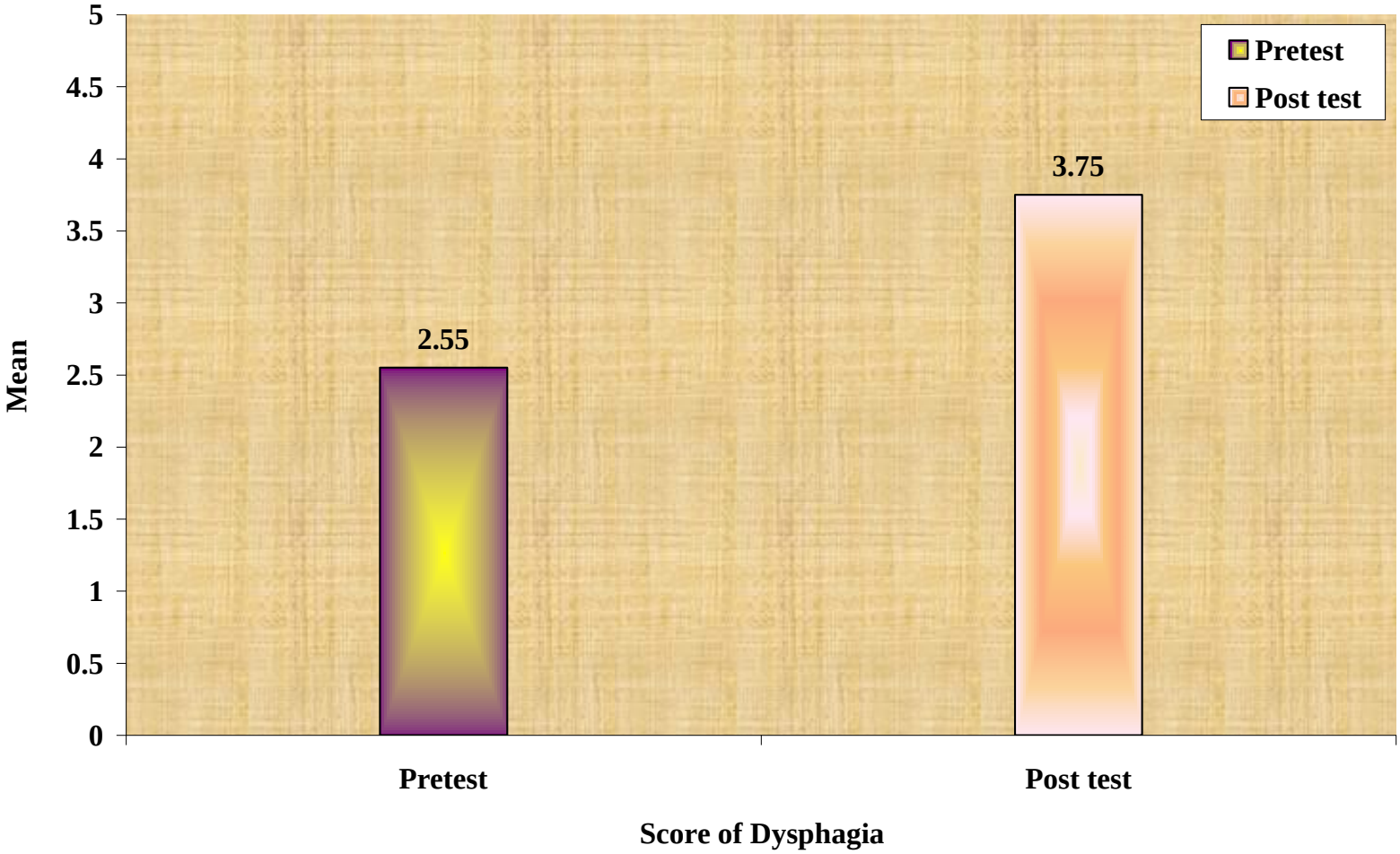

Figure. 19 Distribution of Pre Test and Post Test Mean Score of Experimental Group Regarding Swallowing Exercise on the Level of Dysphagia

Table. 5 Comparison of Dysphagia Score Between Control Group and Experimental Group Before Performing Swallowing Exercise

't' Test for the Mean Difference of Dysphagia Level Between Control Group and Experimental Group

(n = 40)

S.No.	Score of Dysphagia	Mean	SD	Table Value	't' Value
1.	Control group	2.45	0.80	2.021	0.37
2.	Experimental group	2.55	0.73		

Table (5) shows for 38 degrees of freedom and at 0.05 level of significance the table value was 2.021 and the calculated value was 0.37 which is less than the table value. Hence there is no significant difference existing between the control group and experimental group before practicing swallowing exercise on the level of dysphagia. So the homogeneity was maintained between the groups.

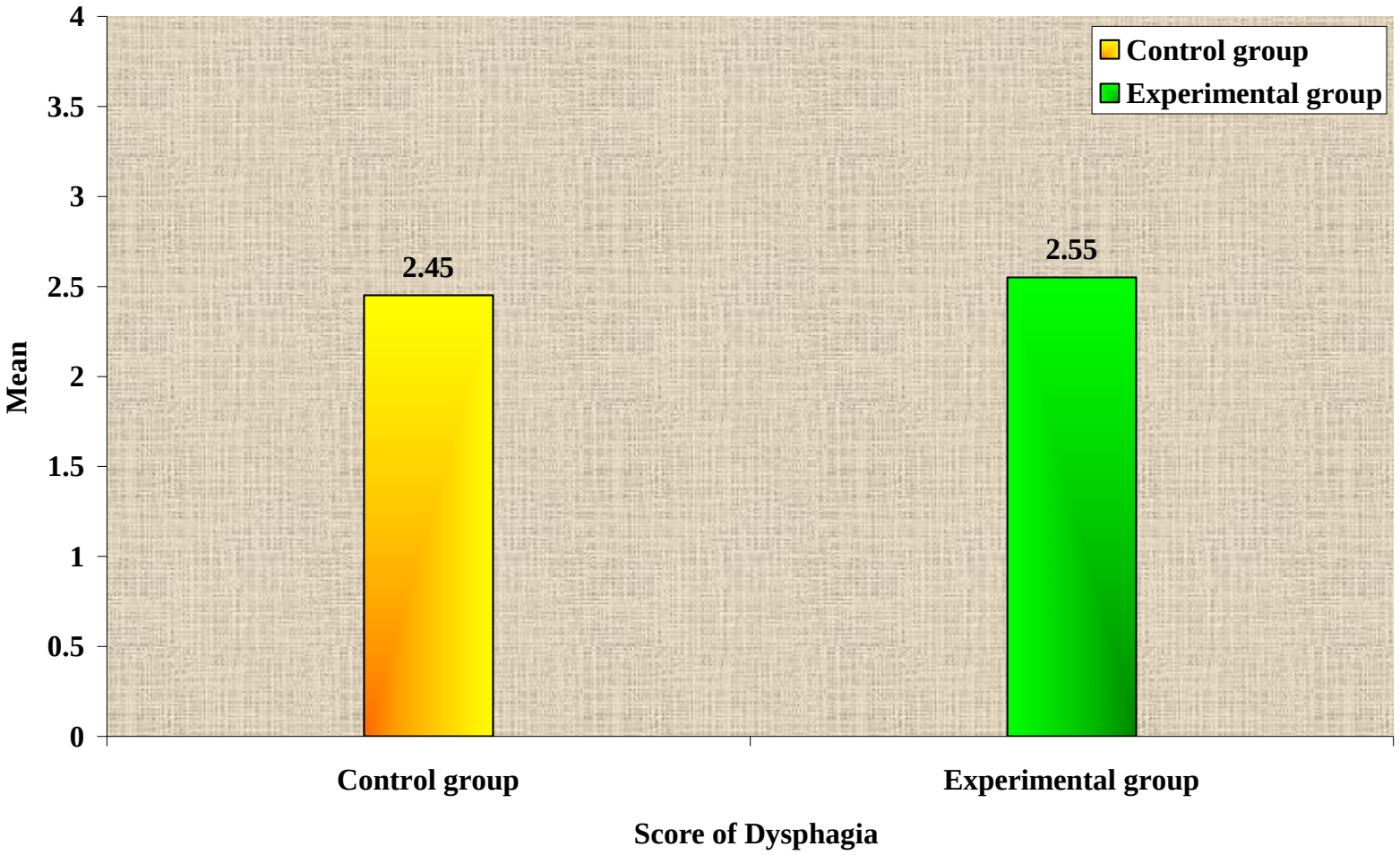

Figure. 20 Distribution of Pretest Mean Score of Dysphagia Level in the Control and Experimental Group Before Performing Swallowing Exercise

Table. 6 Comparison of Dysphagia Score Between Control Group and Experimental Group After Performing Swallowing Exercise

't' Test for the Mean Difference of Dysphagia Score Between Control Group and Experimental Group

(n = 40)

S.No.	Score of Dysphagia	Mean	SD	Table Value	't' Value
1.	Control group	2.4	0.80	2.021	4.90*
2.	Experimental group	3.75	0.88		

*****significant

Table (6) shows for 38 degrees of freedom and at 0.05 level of significance, the table value was 2.021 and the calculated value was 4.90, which was greater than the table value and hence there is significant difference existing between the control group and experimental group. It is concluded that practice of swallowing exercise is effective for reducing dysphagia among patients with oral/ oesophageal/ laryngeal cancer.

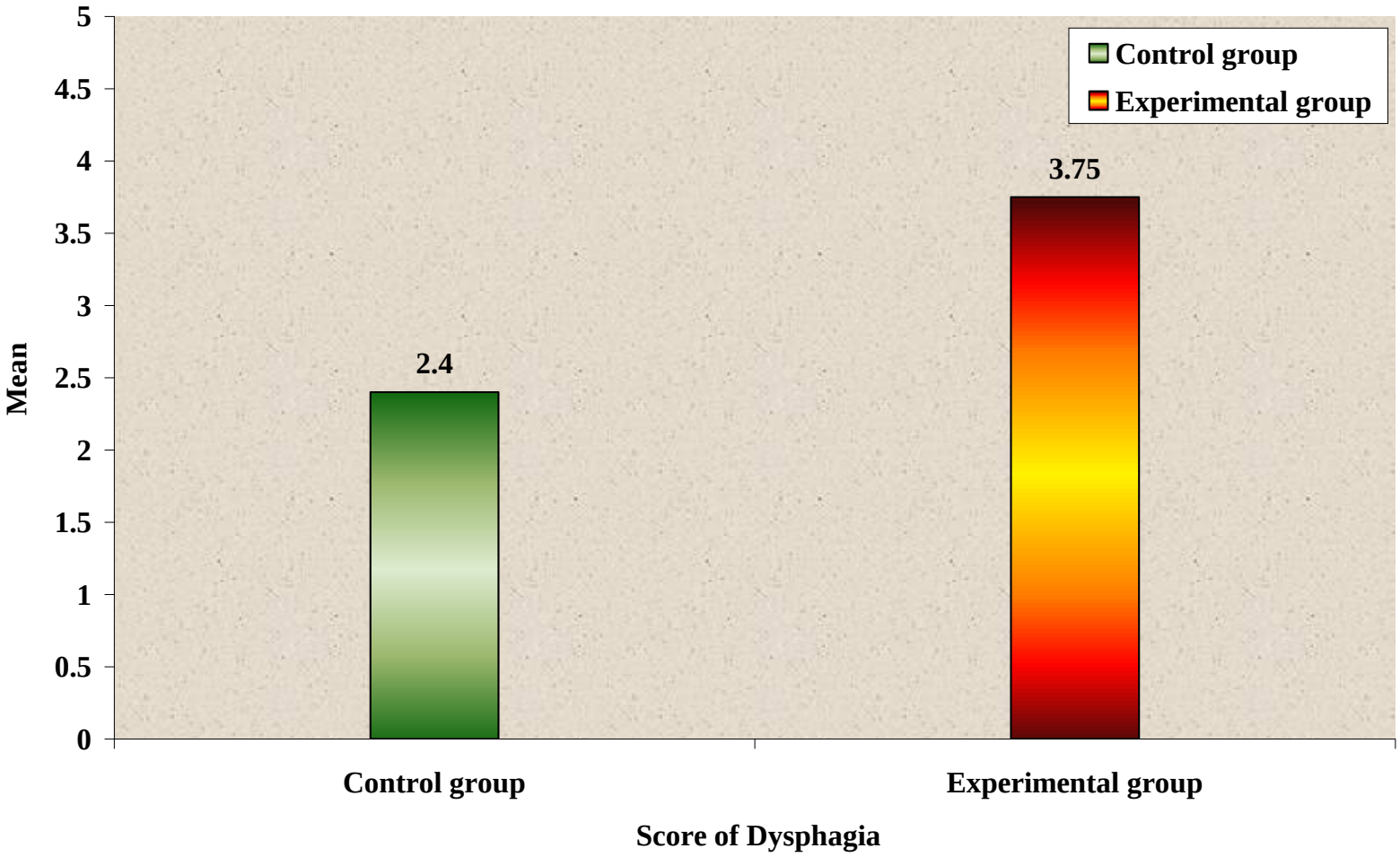

Figure. 21 Distribution of Post Test Mean Score of Dysphagia Level in the Control and Experimental Group After Performing Swallowing Exercise

SECTION – IV

Table. 4 Association of Pre Test Scores of Dysphagia Score with Selected Demographic Variables in Experimental Group

(n = 20)

S.No	Demographic Variable	Below Mean	Above Mean	Degree of Freedom	χ^2
1.	**Age in years**				
	a) 21 – 30 years	1	1		
	b) 31 – 40 years	3	1	3	0.51
	c) 41 – 50 years	3	2		
	d) Above 50 years	5	4		
2.	**Sex**				
	a) Male	4	6	1	3.32
	b) Female	8	2		
3.	**Education**				
	a) Illiterate	1	4		
	b) Primary	3	1	3	4.63
	c) Secondary	4	1		
	d) Higher Education and above	4	2		
4.	**Occupation**				
	a) Unemployed	0	0		
	b) Business	7	1	3	5.86
	c) Labour	1	4		
	d) Professional	4	3		

(Table 7 continues)

(Table 7 continued)

S.No	Demographic Variable	Below Mean	Above Mean	Degree of Freedom	χ^2
5.	**Place of residence**				
	a) Rural	6	4	1	0
	b) Urban	6	4		
6.	**Monthly Income**				
	a) ₹. 5000 - 7000	3	4		
	b) ₹. 7001- 9000	4	1	3	3.39
	c) ₹. 9001 – 10,000	4	1		
	d) ₹. 10,000 and above	1	2		
7.	**Source of information**				
	a) Patient	6	3		
	b) Family members	6	5	3	0.29
	c) Friends	0	0		
	d) Health professional	0	0		
8.	**Duration of illness**				
	a) Newly diagnosed	9	8		
	b) 1 – 3 years	3	0	3	2.35
	c) 3 yrs one month – 6 years	0	0		
	d) 6 years and above	0	0		
9.	**Type of cancer**				
	a) Oesophageal	3	3		
	b) Laryngeal	4	0		
	c) Oral	5	2	4	8.73*
	d) Oropharyngeal	0	2		
	e) Others	0	1		

(Table 7 continues)

(Table 7 continued)

S.No	Demographic Variable	Below Mean	Above Mean	Degree of Freedom	χ^2
10.	**Any other treatment**				
	a) Chemotherapy	2	5		
	b) Radiationtherapy	4	1	2	4.45
	c) Both	6	2		
11.	**Dietary Pattern**				
	a) Vegetarian	2	2	1	0.20
	b) Non vegetarian	10	6		
12.	**Habit**				
	a) Smoking	2	2		
	b) Alcoholism	2	1	3	0.8
	c) Betel nut chewing	2	3		
	d) Nil	5	3		

* Significant

Table (7) shows the demographic variables type of cancer has significant association with pretest score of dysphagia among experimental group and other variables like age, sex, education, occupation, place of residence, monthly income, source of information, duration of illness, other treatment, dietary pattern and habit showed no significant association.

CHAPTER - V

Results and Discussion

This is a quasi-experimental study to assess the effectiveness of swallowing exercise on level of dysphagia among patients with oral/ oesophageal / laryngeal cancer in Ashwin Hospital. The data were analyzed by using descriptive and inferential statistics. The results of the study were discussed according to the objective.

The First Objective of the Study was to Assess the Level of Dysphagia Among Patients with Oral/ Oesophageal/ Laryngeal Cancer in Control Group and Experimental Group

Dysphagia level was obtained by using Waxman's modified dysphagia assessment rating scale. The independent 't' test was performed between the pretest value of control group and experimental group. The mean pretest dysphagia level among control group and experimental group was 2.45 and 2.55. The calculated value of 't' was 0.37 at 38 degrees of freedom and at 0.05 level of significance which is less than the table value (t = 2.021). The findings implied that homogeneity exists among the control group and experimental group before teaching the swallowing exercise.

A similar study was conducted by Barbara Roa Pauloski (2012) regarding the effectiveness of swallowing exercises on level of dysphagia among patients with cancer. Swallowing function in 132 patients with various lesions was evaluated using swallowing specific scales and analyzed by patients complaint of dysphagia .The

results showed that homogeneity exist between the control group and experimental group on the level of dysphagia before performing the swallowing exercise.

The Second Objective of the Study was to Teach the Swallowing Exercise for the Experimental Group

The samples were selected by non-probability convenient sampling technique on the basis of selection criteria. Selected samples were divided into 20 samples as control group and remaining 20 samples as experimental group. On the first day of study dysphagia level was assessed by using Waxman's modified dysphagia assessment scale for both control and experimental group. Explanation and demonstration were given to the experimental group regarding swallowing exercise and pamphlets were distributed. Then the experimental group subjects practiced the swallowing exercise in morning for 30 minutes for 7 days. On 8th day, the post test was conducted by using the same rating scale for both control group and experimental group.

Bhayani. M. K (2013) conducted a study to evaluate the effect of swallowing exercises and maintaining oral intake, study included 366 patients who underwent treatment with chemoradiation therapy for cancer. They found that patients who maintained oral intake of food during treatment and adhered to swallowing exercises were able to maintain a better long term diet after treatment was complete. Overall, 366 patients (74%) maintained oral intake throughout treatment, 167 of these (34%) had partial oral intake and 199 (40%) had complete oral intake. The author concluded that patients completing a program of swallowing exercises during cancer treatment demonstrated superior muscle maintenance and functional swallowing ability.

The Third Objective of the Study was to Assess the Effectiveness of Swallowing Exercise on Level of Dysphagia in Experimental Group

The paired ‘t’ test was performed to assess the effectiveness of swallowing exercise in reducing dysphagia. The mean pre test and post test dysphagia level in experimental group was 2.55 and 3.75. The calculated value of ‘t’ was 7.77 at 0.05 level of significance which is greater than the table value (t = 1.729). This result has shown that the swallowing exercise intervention was effective in reducing dysphagia among patients with oral/ oesophageal/ laryngeal cancer.

Sally. K. Rosenvinge (2010) conducted a sequential observational study to determine compliance with swallowing recommendations in patients with dysphagia and to investigate the effectiveness of changes in practice in improving compliance. Observations were made on compliance with the recommendations regarding swallowing exercise, dietary modifications and general safe swallow recommendations, 31 patients were observed before and 54 after the intervention. There was improvement in compliance with the recommendations on swallowing exercises (48–74%, $P < 0.05$), dietary modifications (35–69%, $P < 0.05$), adherence to safe swallow guidelines (51–90%, $P < 0.01$). Researcher concluded that relatively simple and low cost measures, including an educational programme tailored to the needs of individual disciplines proved effective in improving the compliance with advice on swallowing in patients with dysphagia.

The Fourth Objective of the Study was to Compare the Effectiveness of Swallowing Exercises on the Level of Dysphagia in Control Group and Experimental Group

The independent ‘t’ test was performed to compare the post test values of dysphagia between the control group and experimental group . The findings after analysis reveal that the post test value of dysphagia level among control group and experimental value was 2.4 and 3.75. The calculated value of ‘t’ is 4.9 at 0.05 level of significance which is higher than the table value (t = 2.021). This shows that there was a significant difference in the post test value of dysphagia between the control group and experimental group. It showed that performing swallowing exercise is effective in reducing dysphagia in experimental group.

Cheri. L. Canon (2012) conducted a retrospective case control study with 18 patients with advanced squamous cell carcinoma of the oropharynx, hypopharynx, and larynx. Nine patients received pretreatment swallowing exercises for 20 minutes twice daily for a period of 7 days prior to chemoradiation therapy and nine patients received no intervention. Patients in the pretreatment swallowing exercise group experienced resolution of post deglutitive aspiration and were able to resume oral feedings. Performing pretreatment swallowing exercises produced measurable improvements in swallowing. Studies have shown upto 70% improvement in symptoms of dysphagia following appropriately performed swallowing exercise.

The Fifth Objective of the Study was to Associate the Findings of Pretest Score of Dysphagia Level with Selected Demographic Variables in Experimental Group

The present study revealed that there was a significant association between the type of cancer and the level of dysphagia among patients with oral/ oesophageal/ laryngeal cancer and there was no association with age, sex, education, occupation, place of residence, monthly income, source of information, duration of illness, any other treatment, dietary pattern and habit.

Russi. E. G, et.al., (2013) conducted a study in which they found association between the demographic variable, they reported a significant association between the type of cancer and the level of dysphagia. Other variables like age, sex, education, occupation, place of residence, monthly income, source of information, duration of illness, other treatment, dietary pattern and habit showed no significant association with the level of dyspahgia.

CHAPTER - VI

Summary, Conclusion, Nursing implications, Limitations and Recommendations

Summary

Dysphagia is a medical term for the symptom of difficulty swallowing. Swallowing is a complex action, any condition that weakens or damages the muscles and nerves used for swallowing may cause dysphagia. Overall, head and neck cancer accounts for more than 550,000 cases annually worldwide. Males are affected significantly more than females with a ratio ranging from 2:1 to 4:1. Often, dysphagia makes it difficult to take in enough calories and fluids to nourish the body and can lead to additional serious medical problems. Dysphagia can also affect the quality of life because it may prevent individuals from enjoying meals and social occasions. Swallowing exercises are designed to change the swallow physiology by improving sensory motor integration or by gaining voluntary control over the timing or the coordination of selected oropharyngeal movements during swallowing, treatment may involve muscle exercises to strengthen weak facial muscles or to improve coordination. Keeping this point in view, a study was conducted to assess the effectiveness of swallowing exercises on the level of dysphagia among patients with oral/ oesophageal/ laryngeal cancer.

The Following Objectives were Set for the Study

- To assess the level of dysphagia among patients with oral/ oesophageal/ laryngeal cancer in control group and experimental group.
- To teach swallowing exercises for the experimental group.

- To assess the effectiveness of swallowing exercises on level of dysphagia in experimental group.
- To compare the effectiveness of swallowing exercises on level of dysphagia in control group and experimental group.
- To associate the findings of pretest score of dysphagia with selected demographic variables in experimental group.

The Hypothesis Set for the Study

H_1 - Cancer patients who received swallowing exercises will show significant reduction in the dysphagia level than who do not receive the swallowing exercise.

H_2 - There will be a significant association between the selected demographic variables and pretest score of dysphagia level in experimental group.

Major Findings of the Study were as Follows

- The pre test mean score of control group and experimental group before performing swallowing exercise was 2.45 and 2.55.
- The obtained "t" value of swallowing exercise on the level of dysphagia among control and experimental group before performing swallowing exercise was 0.37.
- The post test mean score of control group and experimental group after performing swallowing exercises was 2.4 and 3.75.
- The obtained "t" value of swallowing exercise on the level of dysphagia among control group and experimental group was 4.9.

- The pre test mean score of experimental group on the level of dysphagia was 2.55 and post test mean score of experimental group on the level of dysphagia was 3.75.
- The obtained “t” value of swallowing exercise on the level of dysphagia among experimental group was 7.77.
- The demographic variables like age, sex, education, occupation, monthly income, place of residence, source of information, duration of illness, other treatment, dietary pattern and habit showed no significant association except the type of cancer with the pre test score of dysphagia among experimental group.

Conclusion

The obtained ‘t’ value for the dysphagia level between control group and experimental group was greater than the table value at 38 degrees of freedom at 0.05 level of significance. The table value was 2.021 and the calculated value was 3.60. So the findings showed that the swallowing exercise has shown significant reduction in the level of dyspahgia among patients with oral/ oesophageal/ laryngeal cancer. Thus the formulated alternative hypothesis was accepted and it is concluded that the cancer patients who received swallowing exercise has shown significant reduction than those who did not receive swallowing exercises. Hence the formulated hypothesis is accepted.

The demographic variables like age, sex, education, occupation, monthly income, place of residence, source of information, duration of illness, other treatment, dietary pattern and habit showed no significant association except the type of cancer with the pre test score of dysphagia among experimental group.

Nursing Implications

The findings of the study have several implications in various areas of nursing education, practice, administration, and nursing research.

Nursing Practice

- It is the responsibility of the health professionals to be aware of the advancement in medical research and to disseminate the same to the general public for the betterment of their health in the future.
- Health professionals can make all the attempts to create awareness regarding swallowing exercise.
- Teaching program can be conducted for groups, as it would allow both literate and illiterate clients to enhance their knowledge.

Nursing Education

- Efforts should be made to improve and expand nursing curriculum to provide more content concerning early identification and early intervention for cancer patients with dysphagia.
- More knowledge should be provided to students regarding swallowing exercise. Students can be encouraged to take up projects and studies on swallowing exercise.
- Nurse educators should emphasize more on preparing students to impart health information to the public regarding swallowing exercise.
- Nursing students should be taught about the importance of health education and various methods of providing health education.
- Periodic seminars and group discussion can be arranged regarding care of cancer patients with dysphagia.

Nursing Administration

- Nursing administrators need to organize continuing nursing program for nursing professionals regarding cancer prevention and motivate them to participate in such activities.
- Nursing administrators can collaborate with the community leaders to provide care and attention to cancer population.
- Nurse administrators should conduct teaching program for cancer patients regarding dysphagia.
- Nurse administrators should keep good contact with help group and services available and should act as a referral agent.

Nursing Research

- Findings of the present study suggest that education and administration should encourage nurses to read, discuss and conduct research to improve knowledge and practice of swallowing exercise and bring about public awareness.
- This study can be used for evidence based nursing practice as a rising trend. It can be a motivation for nurses to conduct research in future on comparing different treatment modalities for dysphagia.
- Nursing researches are the means of expanding the body of knowledge and broaden the scope of nursing. This is possible only if the nurses take initiative in conducting further studies. More research on this area would be beneficial for patients with cancer.
- The effectiveness of research study can be made by further implication of study.

Limitations

- The size of the sample was small to draw conclusion.
- The researcher could not use randomized sampling technique in this study.
- Long term follow up care was not possible due to limited time.

Recommendations

- A similar study can be conducted for a large group of samples as a long term basis.
- A similar study can be conducted with randomization of samples.

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ABSTRACT

Statement of the Problem : A study to assess the effectiveness of swallowing exercises on the level of dysphagia among patients with oral/ oesophageal/ laryngeal cancer at Ashwin Hospital, Coimbatore. **Objectives : (a)** To assess the level of dysphagia among patients with cancer in control group and experimental group. (b) To teach swallowing exercises for the experimental group. (c) To assess the effectiveness of swallowing exercises on level of dysphagia in experimental group. (d) To compare the effectiveness of swallowing exercises on level of dysphagia in control group and experimental group. (e) To associate the findings of pretest score of dysphagia with selected demographic variables in experimental group. **Methodology :** Pretest Post test Control Group only design, a subtype of Quasi Experimental Research design was adopted for assessing the effectiveness of swallowing exercises on the level of dysphagia. The selected sample size was 40, out of which 20 belong to experimental group and 20 belong to control group, selected by non probability convenient sampling technique. **Results :** Descriptive and inferential statistics were used to analyze the values. The obtained 't' value for the level of dysphagia after performing swallowing exercise was 4.9. **Conclusion :** The level of dysphagia among patients with oral/ oesophageal/ laryngeal cancer who practiced swallowing exercise was significantly reduced than those who did not practiced swallowing exercise.

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Regd. Off. : Ashwin Hospital, Sathy Road, Coimbatore - 641 012 * Phone: 0422 2525252 Fax: 0422 4387111
E-mail: aswinhospital@touchtelindia.net * Website: www.ppgcollege.org

To

Through

The Principal,

PPG College of Nursing

Coimbatore – 35.

Respected Sir,

Sub : Seeking permission for conducting research study

I am a student of M.Sc Nursing in PPG College of Nursing. Our college is affiliated to the Tamilnadu Dr. M. G. R Medical University, Chennai. I have taken the specialization in Medical Surgical Nursing.

Topic : A STUDY TO ASSESS THE EFFECTIVENESS OF SWALLOWING EXERCISES ON LEVEL OF DYSPHAGIA AMONG PATIENTS WITH ORAL / OESOPHAGEAL / LARYNGEAL CANCER AT ASHWIN HOSPITAL, COIMBATORE

I request you to kindly permit me to conduct my study in your Hospital. Hope you will consider my requisition and do the needful.

Thanking you,

Yours sincerely,

Date :

Place : Coimbatore

Requisition Letter for Content Validity

From

M.Sc (N) II Year,
PPG College of Nursing,
Coimbatore – 35.

To

Through : Principal, PPG College of Nursing

Respected Sir/Madam,

Sub : Requisition for expert opinion and suggestion for content validity of tool

I am a student of M.Sc (N) II year, PPG College of Nursing affiliated to the Tamilnadu Dr. M. G. R. Medical University, Chennai. As a partial fulfillment of the M.Sc (N) programme. I am conducting

A STUDY TO ASSESS THE EFFECTIVENESS OF SWALLOWING EXERCISES ON LEVEL OF DYSPHAGIA AMONG PATIENTS WITH ORAL / OESOPHAGEAL / LARYNGEAL CANCER AT ASHWIN HOSPITAL, COIMBATORE

Herewith I have enclosed the developed tool for content validity and for the expert opinion and possible solution. It would be very kind of you to return the same as early as possible.

Thanking you,

Yours faithfully,

PPG College of Nursing

Format for the Content Validity

Name of the expert :

Address :

Total content for the tool :

Kindly validate each tool and tick wherever applicable

S.No	No. of Tool/Section	Strongly Agree	Agree	O.K	Not Applicable	Need Modification	Remarks

Remarks Signature of the Expert with Date

LIST OF EXPERTS

1. **Dr. L.P THANGAVELU**

   Medical Director

   Ashwin Hospital

   Coimbatore.

2. **Prof. MEENAKSHI SUNDARAM**

   RVS College of Nursing,

   Coimbatore.

3. **Prof. FUELA**

   Sri Ramakrishna College Of Nursing,

   Coimbatore.

4. **Prof. K. RAJI**

   Vice Principal,

   K.G College Of Nursing,

   Coimbatore.

5. **Prof. KAVITHA**

   Vice Principal,

   Ganga College of Nursing,

   Coimbatore.

SECTION – A

Demographic Profile

Instruction

Kindly go through each item of questionnaire carefully and indicate your response by placing a tick ☑ must on appropriate one.

Sample No: _____

1. Age in year
    a) 21 – 30 years ☐
    b) 31 – 40 years ☐
    c) 41 – 50 years ☐
    d) Above 50 years ☐

2. Sex
    a) Male ☐
    b) Female ☐

3. Educational Status
    a) Illiterate ☐
    b) Primary ☐
    c) Secondary ☐
    d) Higher Education and above ☐

4. Occupation

    a) Unemployed ☐

    b) Business ☐

    c) Labour ☐

    d) Professional ☐

5. Place of Residence

    a) Rural ☐

    b) Urban ☐

6. Monthly Income

    a) ₹. 5000 – 7001 ☐

    b) ₹. 7001- 9001 ☐

    c) ₹. 9001 – 10,000 ☐

    d) ₹. 10,000 and above ☐

7. Source of Information

    a) Patient ☐

    b) Family members ☐

    c) Friends ☐

    d) Health professional ☐

8. Duration of Illness

    a) Newly diagnosed ☐

    b) 1 – 3 years ☐

    c) 3 years one month – 6 years ☐

    d) 6 years and above ☐

9. Type of Cancer

a) Oesophageal ☐

b) Laryngeal ☐

c) Oral ☐

d) Oropharyngeal ☐

e) Others ☐

10. Any Other Treatment

a) Chemotherapy ☐

b) Radiationtherapy ☐

c) Both ☐

11. Dietary Pattern

a) Vegetarian ☐

b) Non vegetarian ☐

12. Habit

a) Smoking ☐

b) Alcoholism ☐

c) Betel nut chewing ☐

d) Nil ☐

SECTION – B

Waxman's Modified Dysphagia Assessment Scale

Levels	Criteria	Score
Level 1	Swallowing is not functional	1
Level 2	Swallowing is delayed	2
Level 3	Swallowing disorder prevents eating for a portion of nutritional needs	3
Level 4	Swallowing disorder does not prevent eating to meet nutritional needs, general supervision is required	4
Level 5	Swallowing is functional for most eating activity, mild difficulty may occur periodically	5

Score

Score 1 – Profound Dysphagia

Score 2 – Severe Dysphagia

Score 3 – Moderate Dysphagia

Score 4 – Mild Dysphagia

Score 5 – Normal Dysphagia

பகுதி - அ

முறையான நேர்காணல் படிவம்

(கீழ்க்கண்ட வினாக்களுக்கு தகுந்த பதிலை கொடுக்கப்பட்டுள்ள கட்டத்தில் (✓) குறிப்பிடுக.)

மாதிரி எண்.....

1. வயது

அ. 21 -30 வரை ☐

ஆ. 31-40 வரை ☐

இ. 41-50 வரை ☐

ஈ. 50 வயதுக்கு மேல் ☐

2. பாலினம்

அ. ஆண் ☐

ஆ. பெண் ☐

3. கல்வித்தகுதி

அ. படிப்பறிவில்லாதவர் ☐

ஆ. ஆரம்ப நிலைக்கல்வி ☐

இ. மேல்நிலைக்கல்வி ☐

ஈ. பட்டப்படிப்பு மற்றும் அதற்கு மேல் ☐

4. தொழில்

அ. வேலையின்மை ☐

ஆ. வியாபாரம் ☐

இ. கூலி ☐

ஈ. தொழில்நுட்பம் சம்பந்தமான தொழில் ☐

5. தங்கும் இடம்

அ. கிராம பகுதி ☐

ஆ. நகரப்பகுதி ☐

6. மாத வருமானம்

அ. ₹. 5001 - 7000 ☐

ஆ. ₹. 7001 - 9000 ☐

இ. ₹. 9001 - 10000 ☐

ஈ. ₹. 10000 மற்றும் அதற்கு மேல் ☐

7. தகவல் தருபவர்

அ. நோயாளி ☐

ஆ. குடும்ப உறுப்பினர் ☐

இ. நண்பர்கள் ☐

ஈ. மருத்துவத்துறை சார்ந்தவர்கள் ☐

8. நோயின் கால அளவு

அ. புதிதாக கண்டறியப்பட்டது ☐

ஆ. 1 முதல் 3 ஆண்டுகள் ☐

இ. 3 ஆண்டுகள் முதல் 6 ஆண்டுகள் வரை ☐

ஈ. 6 ஆண்டுகளுக்கு மேல் ☐

9. புற்றுநோயின் வகை

அ. உணவுக்குழாய் புற்றுநோய் ☐

ஆ. குரல்வளை புற்றுநோய் ☐

இ. வாய் புற்றுநோய் ☐

ஈ. வாய்த்தொண்டை புற்று நோய் ☐

உ. மற்றவை ☐

10. பின்வருவனவற்றில் எந்த சிகிச்சை முறை பின்பற்றுகிறீர்கள்?

அ. கீமோதெரபி ☐

ஆ. ரேடியேசன் தெரபி ☐

இ. இரண்டும் ☐

11. உணவு பழக்கம்

அ. சைவம் ☐

ஆ. அசைவம் ☐

12. உங்களுக்கு கீழே கொடுக்கபட்டுள்ள பழக்கவழக்கம் ஏதேனும் இருக்கிறதா

அ. புகைபிடித்தல் ☐

ஆ. மது அருந்துதல் ☐

இ. வெற்றிலை சாப்பிடுதல் ☐

ஈ. மற்றவை ☐

PROTOCOL ON SWALLOWING EXERCISES

Introduction

Eating and swallowing are complex neuromuscular activities. People normally swallow hundreds of times a day to eat solids, drink liquids, and swallow the normal saliva and mucus that the body produces. Any interruption in the swallowing process can cause difficulties.

Strengthening exercise for swallowing has been found to be beneficial to meet the specific abnormalities of the patient and in prevention of long term swallowing dysfunction. There are several goals in swallowing rehabilitation. The primary goals is to prevent malnutrition and dehydration and reduce the risk of aspiration. Re-establishment of safe and efficient oral intake, prevention of dysphagia prior to medical treatment, and patient education regarding the specifics of their disorder are also important goals of intervention.

Definition

Swallowing Exercises

The training of muscles for the oral, pharyngeal and oesophageal stages of ingesting liquids or solids secondary to injury of the muscles.

- Paula Okin

Swallowing exercises can be defined as facilitating swallowing and preventing complications of impaired swallowing.

- Malagelada

Indications

Damage to the Nervous System Such as

- Stroke
- Brain injury
- Spinal cord injury
- Parkinson's disease
- Multiple sclerosis
- Muscular dystrophy
- Cerebral palsy
- Alzheimer's disease
- Cerebral infarction
- Myasthenia gravis

Problems Affecting the Head and Neck Including

- Cancer in the mouth, throat or oesophagus.
- Injury or surgery involving the head and neck.
- Decayed or missing teeth, or poorly fitting dentures.

Sign and Symptoms

- Coughing during or right after eating or drinking.
- Gurgling sounding voice during or after eating or drinking.
- Extra effort or time needed to chew or swallow.
- Food or liquid leaking from the mouth getting stuck in the mouth.
- Reoccurring pneumonia or chest congestion after eating.
- Weight loss or dehydration from not being able to eat enough.

Procedure

Swallowing exercises is key for the recovery of swallowing function. Dysphagia can be rapidly cured. Learning about the importance of variety of extensive and intense exercises designed to help patients regain the ability to swallow.

1. Tongue Exercises

Purpose

- To increase the strength of the tongue and other mouth muscles in order to improve the oral stage of swallowing and the start of a swallow.

Method

- Open mouth as wide as you can and touch the tip of your tongue to upper teeth or to the front of the palate. Do this for 3 to 5 seconds.

- Again open the mouth and touch the tip of your tongue to the back of the roof of your mouth. Keep your tongue back for 3 to 5 seconds.

- Stick your tongue out as far as you can and leave it there for approximately 10 seconds.
- Bring the tip of the tongue to the very back of the roof of your mouth and keep it there for about 10 seconds.

- Move the tip of your tongue across the roof of your mouth from the very front (just behind your upper teeth) to the very back (to where the soft palate is located).
- Press the inside of each cheek with the tip of your tongue.

2. Super Supraglottic Swallow

Purpose

- The bearing down helps to tilt the arytenoid forward, close the false vocal folds and close the entrance to the airway.
- To improve tongue base retraction in patient with normal anatomy.
- To improve the rate of laryngeal elevation at the beginning of the swallow in patient who has undergone a full course of radiation therapy to the neck.

Method

- Take deep breath and hold your breath tight.

- Bear down tight and hard like you are going to the bathroom or by pulling up on the chair/bed with all your strength.
- Take a bite of food or a sip of liquid.

- Keep bearing down and holding your breath while you swallow.
- After swallow release hold, release breath then cough to clear any residue.

3. Mendelsohn Manevuer

Purpose

- To improve the upward and forward movement of the voice box during swallowing.
- Facilitate the voice box to move up and forward when swallowing to prevent food/ liquid from getting stuck in the throat.

- Prevent aspiration (food/ liquid going into the windpipe).
- To help in opening the oesophagus to allow food/ liquid to pass down the oesophagus more effectively.

Method

- Swallow saliva a few times notice how throat muscles "squeeze" and how voice box moves up and down during the swallow. You can place your fingers lightly on your adam's apple (part of your voice box) to feel the movement of voice box better.

- Now swallow and pay attention to the voice box going up as you swallow.
- When voice box reaches the highest point in your throat, "squeeze" throat muscles hard to keep voice box in that high position.
- Relax the throat and allow the voice box to drop to its normal position, perform repetitions.

4. Shaker Head Raise

Purpose

- To strength the muscles that left the hyoid bone, which left the larynx upward and forward and open the upper oesophageal sphincter.

Method

Sustained Head - Lifting Exercise

- Lie flat on your back with no pillow under your head.

- Lift your head to look at your toes.
- Keep your shoulders flat against the bed or floor.
- Your head should remain lifted for 60 seconds.

- Release and rest for one minute.
- Repeat it three times.

5. Showa Maneuver

Purpose

- To strengthen mouth and throat muscles.

Method

- Push the tongue flat against the top of your mouth while you perform a long hard swallow during which you squeeze all the muscles of the face and neck (like you are swallowing a golf ball).

6. Masako's Technique

Purpose

- To strengthen and increase the movement of the back of the throat during a swallow.

Method

- Stick out your tongue (you may choose to hold the tongue with gauze during this exercise) and swallow hard (with no food or liquid) without pulling your tongue into your mouth.

Physiology of Swallowing Exercises

Dysphagia, or difficulty swallowing can have a devastating effect on health and quality of life. One of the treatments commonly referred to as oral motor exercises has been commonly accepted and practiced for some time. These exercises may target the lips, tongue, face, palate, or neck/ larynx and are designed to improve mobility, strength, and control of swallowing.

There are three main categories of oral motor exercise generally used in clinical practice, active exercises, passive exercises and sensory applications.

Active exercises are not only limited to active range of motion, stretching and strength training these exercises are also used to increase strength, endurance and power through the recruitment of additional motor units as muscle fibres are enlarged. Various forms of stretching affect muscle tone by manipulating the muscles spindles either to inhibit or elicit a stretch reflex. By inhibiting this reflex through slow stretching, muscle tone may be reduced. By inducing a stretch reflex through quick stretch, tone is increased.

Swallowing exercises such as supraglottic swallowing maneuver helps to close the airway at the vocal fold level before and during the swallow. Performing tongue hold exercises increases the tongue base and throat muscles range of motion. Mendelsohn maneuver accentuates and prolong laryngeal elevation and thereby increase the extent and duration of cricopharyngeal opening. Head lifting maneuver are designed to strengthen muscles of the neck in order to facilitate opening of the bottom of the throat for food passage and masako’s technique improve tongue

strength and endurance for food and liquid bolus manipulation, mastication and front and back bolus movement.

Pathophysiology

Patients with swallowing disorders (dysphagia)

↓

Active exercises (Active range of motion, stretching exercises, strength and endurance training)

↓

Helps to close the airway at the vocal fold level before and during the swallow

↓

Accentuates and prolong laryngeal elevation which increases the extent and duration of cricopharyngeal opening.

↓

Increases the tongue base and throat muscles range of motion.

↓

Strengthen muscles of the neck to facilitate opening of the bottom of the throat for food passage

↓

Improve tongue strength and endurance for food and liquid bolus manipulation, mastication and front and back bolus movement.

↓

Reduction in dysphagia

Conclusion

It is important to remember that swallowing problems management must be carefully designed for each individual patient. Exercising the swallowing muscles is the best way to improve the ability to swallow. A basic principle of rehabilitation is that the best therapy for any impaired activity is the activity itself.

A STUDY TO ASSESS THE EFFECTIVENESS OF SWALLOWING EXERCISES ON LEVEL OF DYSPHAGIA AMONG PATIENTS WITH ORAL/ OESOPHAGEAL/ LARYNGEAL CANCER AT ASHWIN HOSPITAL, COIMBATORE

ACKNOWLEDGEMENT

CONTENTS

CHAPTER - I

CHAPTER - II

CHAPTER - III

CHAPTER – IV

CHAPTER - V

CHAPTER - VI

REFERENCES

ABSTRACT

APPENDICES

- உணவை விழுங்கும்போது, மூச்சை இறுக்கிப்பிடித்துக் கொண்டு உடம்பின் அழுத்தத்தை கீழ்நோக்கி செலுத்தவும்.

4. மெண்டல்சன் செய்முறை

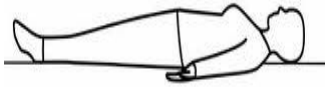
- எச்சிலை சில நிமிடங்கள் விழுங்கவும். உங்களது விரலால் குரல் வளையை தொட்டு அதன் அசைவை உணரவும்.

- பின்னர் எப்பொழுது குரல்பெட்டி தொண்டை பகுதியில் வருகிறதோ அப்பொழுது தொண்டையின் தசைப்பகுதியை இறுக்கிப் பிடிக்கவும்.

5. குலுக்கி தலையை உயர்த்தல்

படி 1

- சமமான தரையில் படுத்துக் கொள்ளவும், தலையணை எதுவும் வைக்கக்கூடாது.



படி 2

- தலையை உயர்த்தி காலை பார்க்கவும்.

படி 3

- தலையை உயர்த்திய நிலையில் 30 வினாடிகள் வைக்கவும்.

6. ஷோவா பயிற்சி முறை

படி 1

- நாக்கினை மேல் வாயில் அழுத்திப் பிடிகவும்.

படி 2

- முகம் மற்றும் கழுத்து பகுதி தசைகளை இறுக்கி பிடிக்கும் தருனத்தில் கடினமாக விழுங்கவும்.

விழுங்குதலுக்கான பயிற்சிமுறைகள்

முன்னுரை

சிரமபட்டு விழுங்குதல் என்பது உணவானது சீரான முறையில் உணவுக்குழல் வழியாக வயிற்றுப் பகுதியினை அடையாமல் இருப்பது ஆகும். உணவுப் பொருளை விழுங்க தசைப்பகுதியின் தொடர்ச்சியான முறையில் பயிற்சி செய்வதன் மூலம் இதனை எளிதாக்க முடியும்.

1. நாக்கிற்கான பயிற்சிமுறை

படி 1

- உங்களால் முடிந்த அளவிற்கு வாயை நன்றாக திறக்கவும், உங்கள் நுனி நாக்கை கொண்டு மேல் உதட்டை அல்லது மேல்தாடையின் உட்பகுதியை தொடவும்.

படி 2

- மறுபடியும் வாயை நன்றாக திறந்து நுனிநாக்கால் வாயின் மேற்பகுதியை தொடவும்.

படி 3

- நாக்கை எவ்வளவு வெளியே தள்ள முடியுமோ அவ்வளவு தள்ளவும். முடிந்த அளவு 10 வினாடிகள்.

2. மசாக்கோ செய்முறை நுட்பம்

படி 1

- நாக்கை வெளியே தள்ளவும் (சுத்தமான துணியைக் கொண்டு நாக்கை பிடிக்கவும்)

படி 2

- நாக்கை வாயினுள் உள்ளிழுக்காமல் விழுங்கவும் (உணவு அல்லது நீராகம் எதுவுமில்லாமல்)

3. குரல்வளை மூடியின் மேல்பகுதியால் விழுங்குதல்

படி 1

- மூச்சை நன்றாக இழுக்கவும், பின்பு சிறிது நேரம் பிடித்து வைக்கவும்.

படி 2

- உடம்பின் அழுத்தத்தை கீழ்நோக்கி தள்ளவும்.

படி 3

- ஒரு வாய் அளவு உணவு அல்லது ஒரு வாய் தண்ணீரை உட்கொள்ளவும்.