EFFECTIVENESS OF VIDEO ASSISTED TEACHING PROGRAMME ON KNOWLEDGE AND ATTITUDE TOWARDS THE HAZARDS OF PLASTIC USAGE AMONG SELECTED HIGHER SECONDARY SCHOOL STUDENTS

A DISSERTATION SUBMITTED TO THE TAMILNADU DR.M.G.R MEDICAL UNIVERSITY, CHENNAI, IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN NURSING

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CERTIFICATE

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ABSTRACT

A study was done to evaluate the effectiveness of video assisted teaching programme on knowledge and attitude towards the hazards of plastic usage.

The objectives of the study were

- To assess the existing level of knowledge and attitude towards the hazards of plastic usage among higher secondary school students.
- To evaluate the effectiveness of video assisted teaching programmeon knowledge and attitude towards the hazards of plastic usage among higher secondary school students.
- To correlate the knowledge with attitude towards the hazards of plastic usage among higher secondary school students.
- To find out the association between posttest knowledge and selected demographic variables.
- To find out the association between the posttest attitude and selected demographic variables.

The conceptual framework of the study was based upon von bertanlanffy's general system theory of learning (1968) model. A quantitative evaluative research approach with experimental (pretest, posttest control group)design was adopted.A total 80 samples were used in this study by simple random sampling technique. A structured questionnaire and likert type attitude scale was used to assess knowledge and attitude related to hazards of plastic usage. Video assisted teaching programme was administered among higher secondary school students .The data collected were tabulated in 12 tables and 4 figures and analyzed by using descriptive and inferential statistics.

The results showed that, majority of the students in control group (60%) had inadequate knowledge and experimental group (57.5%) had moderately knowledge in the pretest score. Where as the posttest level of knowledge that few in control group (25%) and very few in experimental group (2.5%) had inadequate knowledge.

The most of the students in control (87.5) and experimental (50%) groups had neutral attitude. But after video assisted teaching programme majority of the students in experimental group (77.5%) developed positive attitude towards the hazards of plastic usage.

The over all pretest and posttest knowledge in control (t-4.43) and experimental groups (t-14.56) and between control and experimental (t-10.10) was found highly significant at $P<0.001$ and also attitude of higher secondary school students between control and experimental group(7.75) and before and after video assisted teaching programme in control group (4.95) and experimental group (5.46) was found statistically significant at $P<0.001$.

There was no significant association found between level of knowledge and attitude with the selected demographic variables.

The study findings revealed that there was a positive correlation between posttest level of knowledge and level of attitude($r=0.414$) at $P<0.001$.

The study conclude that, the video assisted teaching programme could effectively increase the knowledge and attitude towards the hazards of plastic usage among selected higher secondary school students. This study clearly stated that, health education plays a vital role in improving knowledge and attitude towards the hazards of plastic usage among selected higher secondary school students.

LIST OF CONTENTS

LIST OF TABLES

LIST OF FIQURES

LIST OF APPENDICES

CHAPTER - I

INTRODUCTION

"Say no to plastic or say no to human life"

- M.S.MODI

BACKGROUND OF THE STUDY

According to WHO (1946),Health is a "state of complete physical,mental and social well being and not merely the absence of disease or infirmity."

Richard C.Thompsonet.al,(2009)explained thatplastics have transformed everyday life ;the environment and human health synthesized current understanding of the benefits and concerns surrounding the use of plastics and look to future priorities, challenges and opportunities. It is evident that plastics bring many societal benefits and offer future technological and medical advances: usage is increasing and annual production is likely to exceed 300 million tones by 2010.

L.K.Arnold(1968)found that the first man-made plastic was created by Alexander parkes in 1862. The material called parkesine was an organic material derived from cellulose that once heated could be molded, and retained its shape when cooled.A material consisting of very large molecules characterized by light weight, high corrosion resistance, high strength-to-weight ratios, and low melting points. Most plastics are easily shaped or formed.

L.K.Arnold(1968)expressedthat a plastic is made up of a binder together with plasticizers, fillers, pigments and other additives. Many combinations of the properties of hardness, durability, elasticity and resistance to heat,cold and acid can be obtained in a plastic .

Craig FreudenRich.Ph.D(1968)found that there are two types of plastics thermoplastics and thermoset. Thermoplastics are the plastics not undergo chemical change in their composition when heated and can be molded again and again. examples include polyethylene, Polyprophylene and polyvinylchloride.Thermosets can melt and take once: after they have solidified, they stay solid .

The average annual rate of growth of 8.1% that brought all solid polymers from 7 million tons in the world in 1960 to 196 million tons in 2005 and to continue reaching over 365 million tons in 2015, 540 million tons in 2020.Plastics Europe noted that the world wide plastics production rose to 280 million tones in 2011. This represents around 4% increase from 2010. When 270 million tones of plastics were produced from 2010 to 2016, global plastics consumption is expected to grow by an average of about 4% each year.

Johnson et.al., (2010)explained that plastic playing an increasing role in packaging and consumer products plastics also take up a growing percentage of municipal solid waste streams and pose environmental challenges. Thin plastic bags made from less than 20 micron thick films are choking the drains of many cities causing uncontrolled floods during rainy season. Plastic garbage are estimated to be killing a million creatures in the Sea every year. Plastic bags littering has lead to banned use of thin bags by the consumer industry during retails Sales of Products in many countries.

Knappeeet.al.,(2009) expressed thatdangerous emissions such as dioxins are released into the air when plastics are burned. Dioxins are toxic to human organs and can easily be inhaled or digested. The burning plastic can increase risk of heart disease, damage the nervous system, damage the function of the kidney and liver,

aggravate respiratory disease like asthma,damage the reproductive system and cause physical symptoms like rashes, nausea and headaches. The vapors released during the burning process can damage the eyes and affect the central nervous system.

Chlorinated plastic can release harmful chemicals into the surrounding soil, which can then seep into groundwater or other surrounding water sources.This can cause serious harm to the species that drink this water.

Landfill areas are constantly piled high with many different types of plastics. In these landfills, there are many microorganisms which speed up the biodegradation of plastics. Regarding biodegradable plastics, as they are broken down, methane is released, which is a very powerful greenhouse gas that contributes significantly toglobal warming.

Plastic pollution has the potential to poison animals, which can then adversely affect human food supplies.Some marine species, such as sea turtles, have been found to contain large proportions of plastics in their stomach. When this occurs, the animal typically starves, because the plastic blocks the animal's digestive tract. Marine mammals sometimes become entangled in plastic products such as nets, which can harm or kill them. It has been estimated that over 400,000 marine mammals perish annually due to plastic pollution in oceans.

Plastics contain many different types of chemicals, depending on the type of plastic. Some of the chemicals used in plastic production have the potential to be absorbed by human beings through skin absorption and can cause dermatitis . In many plastics, these toxic chemicals are only used in trace amounts, but significant testing is often required to ensure that the toxic elements are contained within the plastic by

inert material or polymer. Plastic pollution can also affect humans in which it may create an eyesore that interferes with enjoyment of the natural environment.

Recycling of plastic is associated with skin and respiratory Problems, resulting from exposure to inhalation of toxic fumes, especially hydrocarbons and residues released during the Process. The recycled Plastic degrades in Quality and necessitates the production of more new plastic to make the original product. Plastic wastes clog the drains and thus hit especially urban sewage systems. The plastic wastes being dumped into rivers, streams and seas contaminate the water, soil, marine life and also the very air we breathe, Choked drains Provide excellent breeding grounds for disease causing mosquitoes besides causing flooding during the monsoons.

Wilkinson C.F ,et.al found thatthe modern risk extra to basic environmental risks are unsafe use of dangerous chemicals, inadequate disposal of toxic waste and environmental hazards, noise, industrial, pollution, unsafe chemicals in toys and household products may also harm children. Emerging potential environmental threats to health include global climate change, ozone depletion. Contamination of persistent organic Pollutants and chemicals and other hazards and emerging disease one among them is the plastic products and its use. Plastic causes serious damage to environment both during its production and disposal. So the only way to reduce the hazards of plastic is to reduce the use of plastic and there by force a reduction in its production.

The municipal authority under new rules is hold responsible for ensuring usage collection, Storage, Segregation, transportation, Processing and disposal of plastic waste, no damage to the environment during this process, setting up of the collection centers for plastic waste involving manufacture, its channelization to

recyclers, to create awareness among all stakeholders about their responsibilities, and to ensure that open burning of plastic waste is not permitted.

In India,few studies related to the hazards of plastic usage were conducted.Unfortunately,there are no current practices as this is the routine procedure in most places.The researcher observed that there is a less focus on the hazards of plastic usage.Children are more vulnerable to the illness.The long lasting ill effects could be brought down through an awareness and modification of the life style at the early age of their life.Use of plastic containers, bottles and other items by children has become common. It leads to many risk in life. However it could be only prevented rather repenting at the following stage.This could be possible through the education given to them in the school days.Thus the researcher selected the study to find out the effectiveness of video assisted teaching programme upon on knowledge and attitude towards the hazards of plastic usage among selected higher secondary school students.

NEED FOR THE STUDY

Plastic, one of the most preferred materials in todays industrial world is posing serious threat to environment and consumer's health in many direct and indirect ways. Exposure to harmful chemicals during manufacturing, leaching in the stored food items while using plastic packages or chewing of plastic teethers and toys by children are linked with severe adverse health outcomes such as cancer, birth defects, impaired immunity, endocrine disruption, developmental and reproductive effects etc., Promotion of plastics substituted and safe disposal of plastic waste requires urgent and definitive action to take care of this potential health hazard in future.

On 2008,Each year estimated that 500 billion to 1 trillion plastic bags are consumed worldwide. That comes out to over one million per minute. Billions end up

as litter each year or in land fills. Almost 3 million tons of plastic are used to bottle water each year world wide. Nearly 80 Percent of all water bottles are not recycled and wind up in land fills.

Rachada KasemsupM.D.,et.al., (2011)In 2009, Department of health implemented "Food safety Project" in order to reduce the incidence of food related diseases among children and improve their nutrition status. The Projected targeted children in schools nation wide and aimed to change behaviors by providing proper source of food and drinking water as well as knowledge. According to this project, queen Sirikit National Institute of child health started "Safe food, safe plastic containers." Project which focused on proper use of plastic containers for food and drinks by studying on current situation among parents and promoting knowledge by using posters, flyers and games.

PVC is widely used material, including extensive use in toys and other children's products such as chewy teethers,soft figures and inflatable toys. Phthalates mainly used in converting polyvinyl chloride (PVC) from a hard plastic to a flexible plastic. Phthalates migrates into the air into food and into people including babies in their mother's wombs. Phthalates can be released from soft PVC by Surface contact, especially where mechanical Pressure is applied. (eg) during chewing of a PVC teether.

NaiyanaNeesananet.at., (2011)they noted thatplastic is widely used in daily life especially as food and drink containers. If these containers are used in appropriately some chemicals Such as bisphenol A, phthalate and Styrene from plastic may accumulate and impair organ function.

Ceena (2005)explained thatthe effect of plastic on the environment is much easier to see. The trash island in the middle of the plastic ocean, named the pacific garbage patch, is an alarming result of our use of plastic. It is every where and it is slowly collection in the middle of the ocean. Plastic cannot biodegrade. The burning of plastics is also very dangerous as it produces dioxin, a poisonous gas which causes ill effects on human health and environmental cleanliness.

Singh, et.al (2012) found that BisphenolA (BPA) is an estrogen like endocrine disruptor that may leach into food. Research in Environmental Health Perspectives finds that BPA leached from the lining of tin cans, dental sealants and polycarbonate bottles can increase body weight, insulin resistance, which can lead to inflammation and heart disease.

Efforts to reduce the use of plastics and to promote plastic recycling have occurred. Some supermarkets charge their customers for plastic bags, and in some places more efficient reusable or biodegradable materials are being used in place of plastics. Some communities and businesses have put a ban on some commonly used plastic items, such as bottled water and plastic bags.

The evidence from literature showed that hazards of plastic use are highly dangerous to health and environment. The self observation of the investigator regarding the hazards of plastics use motivated to investigate and teach school children on hazards of plastic usage.

Adolescents is the prime time of life, children explore and learn many things around them and they try to impart many things into practice. Peers and friends are also an important asset for the children. Children are the future adults. They can very

well be stated as the miniature adult. As responsible adults we need to preserve the beauty of the environment with a safe atmosphere for the future generations. Concerning children's environmental health, the expanded role of the nurse includes a wide range of activities, such as anticipatory guidance, health education, mass health campaigns, school health programs and environmental health research**.** Education aims at behaviour modification and peer influence makes it more influential hence teaching the little children about the hazards of plastic use and its prevention we can help them to bring about changes and thereby have a safer and greener world to live in.

STATEMENT OF THE PROBLEM

A study to evaluate the effectiveness of video assisted teaching programme on knowledge and attitude towards the hazards of plastic usage amongselected higher secondary school students in Dindigul.

OBJECTIVES OF THE STUDY

1. To assess the existing level of knowledge and attitude towards the hazards of plastic usage among higher secondary school students.
2. To evaluate the effectiveness of video assisted teaching programme on knowledge and attitude towards the hazards of plastic usage among higher secondary school students.
3. To correlate the knowledge with attitude towards the hazards of plastic usage among higher secondary school students.
4. To find out the association between posttest knowledge and selected demographic variables.

5. To find out the association between the posttest attitude and selected demographic variables.

HYPOTHESIS

H_1: There will be a significant difference in the pretest and posttest knowledge towards the hazards of plastic usage among higher secondary school students.

H_2: There will be a significant difference in the control and experimental groups students knowledge towards the hazards of plastic usage among higher secondary school students.

H_3: There will be a significant difference in the pretest and posttest attitude towards the hazards of plastic usage among higher secondary school students.

H_4: There will be a significant difference in the control and experimental groups students attitude towards the hazards of plastic usage among higher secondary school students.

H_5: There will be a significant relationship between knowledge and attitude towards the hazards of plastic usage among higher secondary school students.

H_6: There will be a significant association between posttest knowledge and attitude with the selected demographic variables.

OPERATIONAL DEFINITIONS

Effectiveness

In this studyit refers tothe extent to which video assisted teaching programme developed the desired results as measured by knowledge questionnaire regarding hazards of plastic usage and expressed in terms of gain in knowledge score.

Knowledge

It refers to the responses given to structured questionnaire regarding hazards of plastic usage among highersecondary schoolstudents.

Attitude

In this study it refers to the way of thinking, believes and feelings regardinghazards of plastic usage as expressed in the form of statement as assessed by rating scale.

Plastic

A material consisting of very large molecules characterized by light weight, high corrosion resistance, high strength-to-weight ratios, and low melting points. Most plastics are easily shaped or formed.

Hazards of plastic use

It refers to the ill effects casual by plastic on the environment and health of human beings, in terms of physical and emotional capabilities.

Video assisted teaching programme

In this programme first facilitator guides the discussion. Second video caste that contains information, third hand out for the participants so they can be actively involved in the process.

Higher secondary school students

It refers to thestudents between the ages of 15 and16years studying in 11thstandard of anGovt. higher secondary school students.

ASSUMPTIONS

The study assume that

- Students comes from educate family background may have knowledge towards the hazards of plastic usage.
- The knowledge and attitude of highersecondary school students will influence their practice towards thehazards of plastic usage.
- Health education at regular interval will improve their knowledge and promotes attitude,practices among higher secondaryschool students.
- Demographic variables of higher secondary schoolstudents may or may not influence knowledge and attitude towards the hazards of plastic usage.

DELIMITATION

The study was limited

- The study will be focus onGovt. highersecondary school students only
- This study was confirmed to selected school
- Data collection period was limit for 6 weeks
- Can understand Tamil

PROJECTED OUTCOME

- The findings of the study would help to identify the level of knowledge and attitude of higher secondary school students about hazards of plastic usage.

- The development of the video assisted teaching programme would be help to improve knowledge and attitude towards the hazards of plastic usage among higher secondary school students.
- The used of the video assisted teaching programme was enable the learner to grasp the information more easily and it remains in their mind for longer.

CONCEPTUAL FRAME WORK

The Conceptual frame work of the present study was developed by the investigators based on von bertanlanffy's general system theory of learning (1968), A system is set of interrelated parts that comes together to form a "whole" Each part is necessary to make a complete meaningful whole. This consists of component like input, throughput, output, feedback.

In the present study, focused on hazards of plastic usage among Govt. Higher Secondary Schools students were considered as an open system because they receiving information from the environment. The system uses this input to maintain homeostasis.

INPUT

The first component of a system is input, which is the information, energy or matter, which enters a system, For a system to work well input should contribute to achieve the purpose of the system. It refers to demographic data of Govt. Higher secondary school students, it include age, Sex, Father's education, Mother's education, Father's Occupation, Mother's Occupation, Area of residence ,family income and source of information.

Pretest and posttest knowledge using structured questionnaire and likert type attitude scale on hazards of plastic usage. Video program on hazards of plastic usage it comprises of introduction of plastic, types of plastic, hazards of plastic, disposal of the plastic wastes & prevention of plastic hazards.

These factors were taken into Consideration as input for assessing the knowledge and attitude of Govt. higher Secondary School Students.

THROUGHPUT

It's the Process that allows the input to be changed, so that is useful to the system. The action needed to accomplish the desired task. The action is to implement Video assisted teaching Programme to change the level of knowledge and attitude towards the hazards of plastic usage among higher Secondary School students.

OUTPUT

Based on the input and throughput the system returns Output to the environment in an altered State. The end result or product of the system. Outputs vary widely depending on the type and purpose of the system affection the environment. Therefore the Output refers to the adequacy of knowledge and attitude among Govt. Higher Secondary School Students on hazards of plastic usage. Level knowledge was interpreted and the level of attitude was interpreted as positive, neutral and negative.

FEEDBACK

It refers to determine whether or not the end result of the system has been achieved. Feedback emphasizes the effect of the input, throughput and output. It showed that Govt. Higher Secondary School Students obtained whether adequate knowledge or moderate knowledge or inadequate knowledge and positive attitude or neutral attitude or negative attitude.

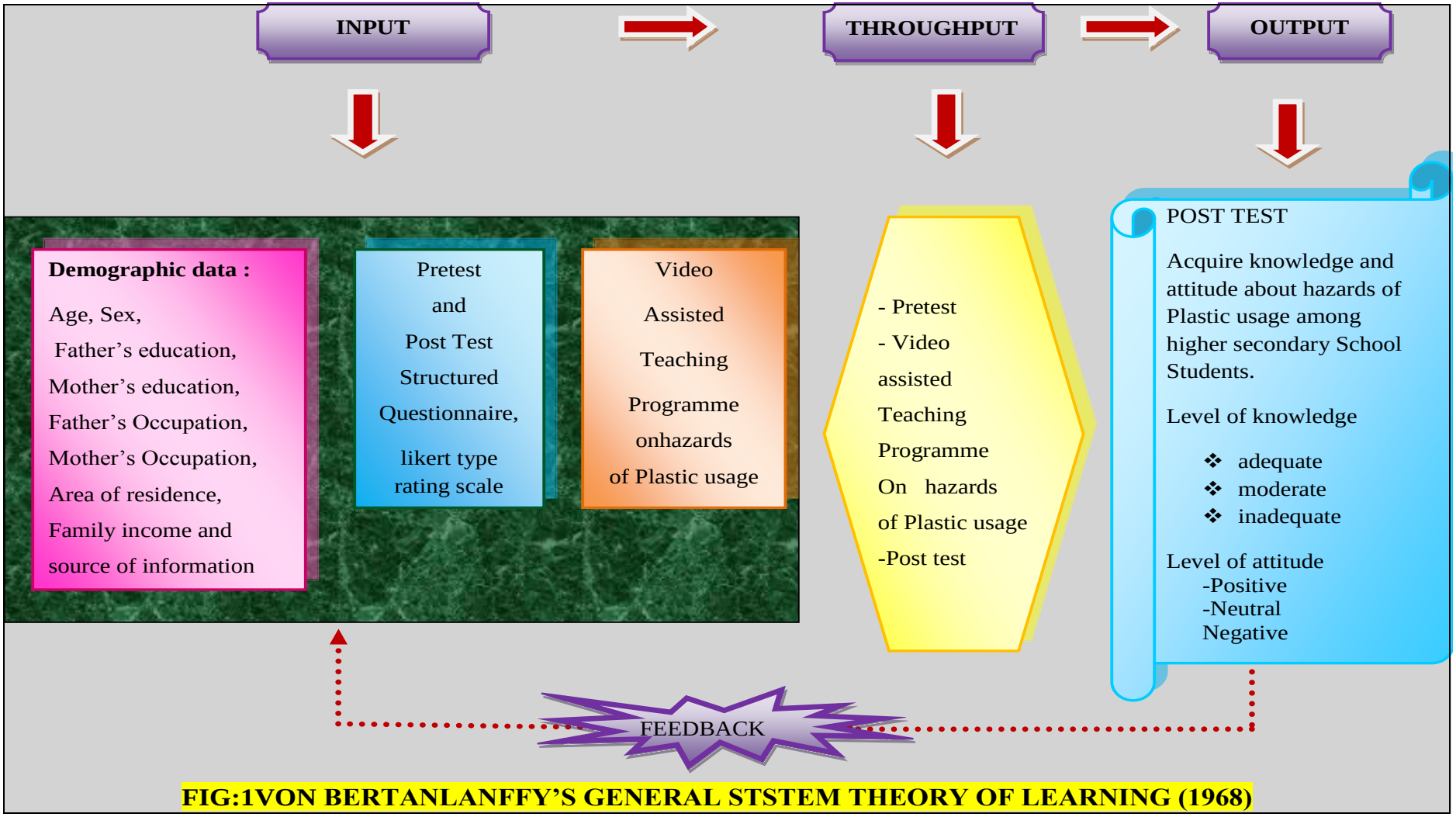

FIG:1VON BERTANLANFFY'S GENERAL STSTEM THEORY OF LEARNING (1968)

SUMMARY

This chapter has dealt with the introduction,need for the study, statement of the problem, Objectives of the study, hypothesis, Operational definition, Assumption, Delimitation and Projected outcome and conceptual frame work of the study.

Organization of the report

Further aspects of the study are presented in the following five chapters.

In Chapter II- Review of literature

In Chapter III - Research Methodology whichincludes, research design, setting, population, sample and sampling technique, datacollection, tool description, Validationand reliability of tools, pilot study, data analysis

In Chapter IV - Analysis and Interpretations of data is presented in terms and descriptive and inferential status

In Chapter V - Discussion

In Chapter VI - Summary, Conclusions, Implications, Recommendations and Limitations are presented.

The reports end with selected references and annexure

CHAPTER-II

REVIEW OF LITERATURE

A Literature Review involves the systematic identification,location, scrutiny and summary and written materials that contain information on the research problem (Polit and Beck,2007).

This chapter deals with a review of published and unpublished research studies and from related materials for the present study. This review helped the Researches in building the foundation of the study.

The review of literature in this chapter is presented under the following headings

I.Studies related to hazards on plastic usage

II.Studiesrelated to knowledge regarding hazards on plastic usage

III.Studies related to attitude regarding hazards on plastic usage

IV.Studies related to video assisted teaching programme.

I.STUDIES RELATED TO HAZARDS ON PLASTIC USAGE

A recent study by researchers from the University of Gothenburg in Sweden, ranked the environmental health hazards of the most common plastics on the market. They found PVC to be the most widely used, hazardous plastic. "PVC should receive extra attention because of its carcinogenic monomer, being the third largest plastic, and requiring the most and often several hazardous additives."(**Annie,2011)**

The study was conducted at the University of Gothenburg, The objective of this study a third of the tested plastic products released toxic substances, including 5

out of 13 products intended for children.The toxicity of 83 randomly selected plastic products and synthetic textiles. The newly purchased products were leached in pure (deionised) water for 1-3 days. The acute toxicity of the water was then tested using water fleas (Daphnia magna)."A third of all the 83 plastic products and synthetic chemicals that were tested released substances that were acutely toxic to the water fleas, despite the leaching being mild. Five out of 13 products that were intended for children were toxic, for example bath toys and buoyancy aids such as inflatable armbands.The products that resulted in toxic water were soft to semi-soft products made from plasticised PVC or polyurethane, as well as epoxy products and textiles made from various plastic fibres. The toxicity was mainly caused by fat-soluble organic substances.**(Delilah Lithner, 2011)**

The study was conducted atDepartment of Occupational and Environmental Health, Tongji Medical College of Huazhong University of Science and Technology, in China. Di-(ethylhexyl), phthalate (DEHP) is a common plasticizer used in industrial and diverse consumer products. Animal studies indicate DEHP caused developmental, reproductive, and hepatic toxicities. However, human studies of the potential effects of DEHP are limited. The exposed site with a history of over 20 years of waste plastic recycling was located in Hunan Province, China. The reference site without known DEHP pollution source was about 50 km far away from the exposed site. In this study, 181 workers working in plastic waste recycling and 160 gender-age matched farmers were recruited. DEHP concentrations in water and cultivated soil samples,serum thyroid-stimulating hormone, malondialdehyde (MDA), superoxide dismutase (SOD), urinary 8-hydroxy-2'-deoxyguanosine (8-OHdG), and micronuclei frequency in human capillary blood lymphocytes were analyzed. Results showed that mean levels of DEHP were greater in environment at the recycling site than at

reference site (industry wastewater for the exposed: 42.43 μg/l; well water: 14.20 vs. 0.79 μg/l, pond water: 135.68 vs. 0.37 μg/l, cultivated soil: 13.07 vs. 0.81 mg/kg. The workers had higher median levels of MDA (3.80 vs. 3.14 nmol/ml) and urinary 8-OHdG (340.37 vs. 268.18 μmol/molcreatinine) and decreased SOD activities (112.15 vs. 123.82 U/ml) than the reference group.Multivariate analysis revealed that the history of working in waste plastic recycling was an independent risk factor for the increased urinary 8-OHdG levels in the male workers. It concluded thatthe occupational DEHP exposure might contribute to oxidative deoxyribonucleic acid damage in the male workers.**(Wang Q, et.al, 2011)**

In Silent Spring Institute, Newton,USA.,**Rudel RA, et.al., (2011)** was conducted a study to evaluate the contribution of food packaging to exposure, they measured urinary BPA and phthalate metabolites before, during, and after a "fresh foods" dietary intervention. They selected 20 participants in five families based on self-reported use of canned and packaged foods. Participants ate their usual diet, followed by 3 days of "fresh foods" that were not canned or packaged in plastic, and then returned to their usual diet. They collected evening urine samples over 8 days and composited them into preintervention, during intervention, andpostintervention samples. They used mixed-effects models for repeated measures and Wilcoxon signed-rank tests to assess change in urinary levels across time. Results showed that Urine levels of BPA and DEHP metabolites decreased significantly during the fresh foods intervention [BPA geometric mean (GM), 3.7 ng/mL preintervention vs. 1.2 ng/mL during intervention; mono-(2-ethyl-5-hydroxy hexyls)phthalate GM, 57 ng/mL vs. 25 ng/mL]. The intervention reduced GM concentrations of BPA by 66% and DEHP metabolites by 53-56%. Maxima were reduced by 76% for BPA and 93-96% for DEHP metabolites. It concluded that, BPA and DEHP exposures were

substantially reduced when participants ‘diets were restricted to food with limited packaging.

The study was conducted by**Department of Environmental Chemistry**, Barcelona, Spain.Migration of plasticizers phthalates, bisphenol A and alkyl phenols from plastic containers and evaluation of risk.This study investigates the potential migration of plasticizers, plastic components and additives from several plastic water bottles. Compounds studied were phthalates (dimethyl phthalate, di-n-butyl phthalate, benzylbutyl phthalate, bis(2-ethylhexyl) phthalate), bis(2-ethylhexyl) adipate, octylphenol, 4-nonylphenol and bisphenol A. Polycarbonate (PC), high-density polyethylene (HDPE), low-density polyethylene (LDPE), polyethylene terephthalate (PET) and polystyrene (PS) plastics used in the water bottling sector were tested using three kinds of total or specific migration tests: (1) standard method UNE-EN ISO 177; (2) ultrasonic forced extraction; and (3) standard method UNE-EN 13130-1. Inaddition, bottled waters contained in different plastic materials were analyzed to determine the potential migration of target compounds in real conditions. In all cases, samples were solid-phase extracted using Oasis HLB 200 mg cartridges and analyzed using GC-MS in scan-acquisition mode. Bisphenol A and 4-nonylphenol were detected in incubated samples, indicating that migration from food plastics can occur at the experimental conditions tested. The total daily intake was calculated according to the levels detected in bottled water and the assessment of the consumers' risk was evaluated taking into consideration toxicological and legislative values.

According to **Yost JL,et.al., (2008),**Department of Chemistry, Ashland University, Ashland, USA, determined thatinexpensive plastic jewelry was a possible source of toxic lead for children. Samples of more than 100 inexpensive plastic

jewelry items were analyzed for lead content. Beads were screened by soaking in 1 M nitric acid. Nine items found to release more than 30 microg of lead per bead were further tested for accessible lead, and scrapings of the bead coatings were analyzed for total lead content. The maximum accessible lead found was 49 microg per bead, which is below the current US Consumer Product Safety Commission limit of 175 microg. However, when the number of beads in each item was taken into account, six of the nine leaded samples contained more than 175 microg accessible lead per item. The lead in these items appears to be associated with lead-based paints used to produce glossy coatings on imitation pearls and similar items. Coatings obtained by scraping individual beads contained 3.5-23% lead, which far exceeds the US regulatory limit of 0.06% lead in paints on items intended for children. Our results demonstrate that plastic jewelry items merit the attention of public health and consumer protection agencies seeking to limit the exposure of children to lead.

A descriptive study was done about the hazards of plastics to the marine environment was conducted at South America and the findings (90%) revealed that the marine life is at the peak of destruction due to the tons of plastics that are thrown as wastes into the seas. **(Kurdi, 2006)**

According to**Simoneit BR, et.al.,(2005),**Environmental and Petroleum Research Group, College of Oceanic and atmospheric Sciences, Oregon State University,USA.The objective of this study was to determined thatCombustion products of plastics as indicators for refuse burning in the atmosphere.To identify specific tracer compounds generated during such open-fire combustion, both smoke particles from burning and plastic materials from shopping bags, roadside trash, and landfill garbage were extracted for gas chromatography-mass spectrometry analyses.

Samples were collected in Concón, Chile, an area frequently affected by wildfire incidents and garbage burning, and the United States for comparison. Atmospheric samples from various aerosol sampling programs are also presented as supportive data. The major components of plastic extracts were even-carbon-chain n-alkanes (C16-C40), the plasticizer di-2-ethylhexyl phthalate, and the antioxidants and lubricants/antiadhesivesIrganox 1076, Irgafos 168, and its oxidation product tris(2,4-di-tertbutylphenyl) phosphate. Major compounds in smoke from burning plastics include the non-source-specific n-alkanes (mainly even predominance), terephthalic acid, phthalates, and 4-hydroxybenzoic acid, with minor amounts of polycyclic aromatic hydrocarbons (including triphenylbenzenes) and tris(2,4-di-tert-butylphenyl)phosphate. 1,3,5-Triphenylbenzene and tris(2,4-di-tert-butylphenyl)-phosphate were found in detectable amounts in atmospheric samples where plastics and refuse were burned in open fires, and thus we propose these two compounds as specific tracers for the open-burning of plastics.

A quantitative study at Boston was conducted to determine the incidence and severity of plastic hazards among industrial workers in a polymer factory. 90 samples were collected over a period of 12 months. The investigator concluded that multiple hazards such as skin (6.5 +0.87) and gastric problems (7.33+1.27) can arise with the use of plastic polymers. **(Campbell, 2004)**

A descriptive study was conducted about the incidence of complications and their potential risks of hazards of plastics among 72 workers of a factory at Houston. Convenience sampling was used to select the samples. Data analysis was done using descriptive and inferential statistics. Results revealed that about (6.2 +2.48) 15.4% of them developed skin disorders. **(Horwood, 2003)**

A Population-based cross-sectional study was conducted in Finland, with the Objective to find relation between the presence of plastic wall materials in the home and respiratory health in children. The study population included 2568 children whose parents or other guardians completed a questionnaire (response rate:80.3%). Analysis was computed using logistic regression models, the result revealed, lower respiratory tract symptoms - persistent wheezing were strongly related to the presence of plastic wall materials, whereas upper respiratory symptoms were not. The risk of asthma was also increased in children exposed to such materials. The study concluded that emissions from plastic materials indoors have adverse effects on the lower respiratory tracts of small children.(**VeonRykavik,2002)**

A Cross-Sectional Study was conducted in China,with the objective to assess the effect of occupational exposure to high levels of phthalate esters on the balance of gonadotropin and gonadal hormones including luteinizing hormone, follicle-stimulating hormone, free testosteroneand estradiol.They examined urine and blood samples of 74 male workers at a factory producing unfoamed polyvinyl chloride flooring exposed to di-*n*-butyl phthalate (DBP) and di-2-ethylhexyl phthalate (DEHP) and compared them with samples from 63 male workers from a construction company, group matched for age and smoking status. Results showed that,Compared to the unexposed workers, the exposed workers had substantially and significantly elevated concentrations of mono-*n*-butyl phthalate 644.3 vs. 129.6 μg/g creatinine, and mono-2-ethylhexyl phthalate 565.7 vs. 5.7 μg/g creatinine. It was significantly lower (8.4 vs. 9.7 μg/g creatinine, in exposed workers than in unexposed workers. It was negatively correlated to MBP ($r = -0.25$) and MEHP ($r = -0.19$) in the exposed worker group. Regression analyses revealed that it decreases significantly with increasing total phthalate ester score (the sum of quartiles of MBP and MEHP; *r*=

−0.26). In Conclusionthey observed a modest and significant reduction of serum it in workers with higher levels of urinary MBP and MEHP compared with unexposed workers.**(Guowei Pan, et.al.,1997)**

II. STUDIES RELATED TO KNOWLEDGE REGARDING HAZARDS ON PLASTIC USAGE

A study was conducted to assess the effectiveness of peer mediated teaching on knowledge regarding Hazards of Plastic use among School Children in a Selected School, Salem. A quantitative evaluative research approach with pre-experimental (one group pretest, posttest) design was used among 66 school children in $5^{th}$and 6^{th} standard, who were selected by Non probability convenience sampling technique from Government Elementary School. A closed ended questionnaire was used to assess the knowledge of the school children .Data was analyzed by using descriptive and inferential statistics. Pretest level of knowledge regarding hazards of plastic use, showed that similar percentage of children 30(50%) had inadequate knowledge and moderately adequate knowledge and none of them had adequate knowledge. During post-test all of the children 60(100%) had adequate knowledge. The overall pretest knowledge was 31.3% and the posttest mean score was 83.4% revealing a difference of 51.09%. Highly significant difference found between pre and post test scores of level of knowledge in all the areas and in the overall level of knowledge (t = 33.58**). There was no significant association between the level of knowledge of school children and their selected demographic variables. The study implied that the peer mediated teaching on level of knowledge of school children regarding hazards of plastic use was an effective intervention to increase the knowledge of children.(**Sabin Peter,2012)**

Ceena, P A, (2005) conducted a study on planned teaching programme regarding the hazards of plastic use to the high school students plays an important role to phase out the use of plastic from daily life and protect the health. The pre-experimental one group pretest post-test design was adopted for this study. The sample consisted of 100 English medium high school students who met the inclusion criteria in a selected urban setting. The schools were selected conveniently and the sample by stratified random sampling technique .Results showed the data were analyzed in terms of descriptive and inferential statistics. There was significant increase in the mean posttest (X_2 =22.81) when compared with the mean pretest (X_1=14.16) knowledge scores. The computed 't' value (t99=28.7) showed significance in the effectiveness of planned teaching programme. The area wise knowledge scores of post-test were highly significant in all areas except regarding the use of plastics. The study Concluded,the planned teaching programme has motivated the students to learn on the effective and alternative use of plastic in their daily life and also spread the news to their friends and relatives.

A study conducted by 2nd year M.Sc nursing students of 2008 batch of K PandyarajahBallal Nursing Institute, College of Nursing,Ullal, to assess the knowledge of nursing personnel on plastic waste management by using a structured knowledge questionnaire. The study revealed that among 100 subjects, 64% of subjects had poor knowledge, 36% had average knowledge and none of the subjects had good or excellent knowledge on plastic waste. Based on these assessments, the students gave health teaching using A.V. aids and post test revealed 18% of subjects with excellent knowledge and 34% with good knowledge. The investigators then concluded saying that continuing nursing education on plastic waste management was effective in improving the knowledge of subjects on waste management.

III.STUDIES RELATED TO ATTITUDE REGARDING HAZARDS ON PLASTIC USAGE

In the year 2012, **Samuel Yeboah Asuamah** conducted a study to assess attitude toward recycling and waste management: a survey of marketing students in sunyani polytechnic, Ghana. The aims at contributing to the body of knowledge in the area of waste management by examining students attitude towards solid waste recycling and the strategies for recycling. The research is based on quantitative research design and a descriptive survey of the Students at Sunyani Polytechnic that were selected using convenience sampling method for a sample of 139. Data were analyzed using frequency, percentages and One-Way Analysis of variance (ANOVA). Respondents knowledge and attitude towards solid waste recycling is good and positive.

The study was conducted to assess knowledge, attitudes, and practices relating to plastic containers for food and drinks among parents and health personnel. 100 parents and 100 health personnel from Queen Sirikit National Institute of Child Health are included in the study. The questionnaires which contained 6 parts measuring knowledge, attitudes and practices about plastic containers for food and drinks are used to collect the data. Results showed there are no differences in knowledge, attitudes and practices relating to plastic containers between parents and health personnel. Even though, 80 percent of participants usually use plastic containers for food and drinks, their knowledge about plastic is inadequate. The study concluded that,Parents and health personnel were aware of health effects of plastic containers, but they do not know how to use and purchase plastics properly. (**Kasemsup R,et.al., 2011**)

A study was conducted at the University of Alabama campus, to assess attitudes and behaviors of students related to plastic bags. A survey was developed and administered to 162 students on campus. First, students' dominant attitude toward single-use plastic bags is not consistent with dominant behavior or how they use plastic bags, and present stimuli in many retail environments are strong enough that students generally use plastic bags despite conflicting attitudes. Second, though surveyed students are aware of problems associated with the plastic bag, these items are a valued part of some students' shopping experiences. **Kate elizabethmiller(2011)**

DuPaul, et.al., (2009) conducted a study in Bangladesh to assess the knowledge, attitude of adolescents regarding problems due to the use of plastic bottles. A random sample of 300 adolescents was taken and a questionnaire was used to all the study group.The result of the study was, out of 300 adolescents only 23% of population know about the ill effects of plastic bottle like GI problems, cancer etc.

A study designed by **Criscitiello, (2008)** to assess the knowledge, attitude and practices of students regarding plastic waste management. Karimnagar town (Andhra Pradesh) has a population of 5.2 lacs. It has 267 students in the community. Out of 267students, 47 were selected by systematic random sampling. A total of 500 study subjects were selected from these community and the data were collected by one to one interview using pre-tested pre-designed proforma. The result of this study is 30 % of students dispose the plastic properly. Others need proper health education regarding plastic disposal.

IV.STUDIES RELATED TO VIDEO ASSISTED TEACHING PROGRAMME

Nobel Mathew (2012) conducted a study to assess the effectiveness of video assisted teaching programme on knowledge and attitude regarding smoking and smokeless tobacco use and its health hazards in Bangalore. 100 girls and boys of school students were used as samples. The data collected were analyzed and interpreted based on descriptive and inferential statistics. In pre-test, 35(70%) boys and 41 (82%) girls had poor knowledge, 15(30%) boys and 9 (18%) girls had average knowledge and none of the sample had good knowledge. Whereas in posttest none of the students had poor knowledge, 13 (26.0%) boys and 22 (44%) girls had average knowledge and 37 (74.0%) boys and 28 (56%) girls have gained good knowledge regarding smoking and smokeless tobacco use and its health hazards. In pre-test, only 23(54%) boys and 11 (22%) girls had positive attitude towards non tobacco use and tobacco control programme and 27(46%) boys and 39 (78%) girls had negative attitude towards non tobacco use and tobacco control programme. But in posttest majority 48 (96%) boys and 50 (100%) girls showed positive attitude towards non tobacco use and tobacco control programme. There was significant difference between mean posttest knowledge score of boys (18.36) and mean pretest knowledge score (7.48). The finding of the present study reveals that there is a significant gain in knowledge and change in attitude among school students following video assisted teaching programme. Therefore such program may be used to promote awareness among school students regarding tobacco use and its ill effects on health.

A study was conducted to evaluates the effectiveness of video teaching program on knowledge and attitude of sexually transmitted infections among female sex workers at Madurai.She adopted experimental design, Convenience sampling technique to find out the effectiveness of video assisted teaching program, Mean score

in post test was higher than pretest knowledge and attitude .It was 61.45 (23.43) and 69.43(47.22) respectively. There was significant difference between pre test and post test knowledge and attitude regarding sexually transmitted infections among female sex workers they were t=42.12and respectively significant at 0.05 level. This showed that the video teaching programme was effective. It was observed that video teaching programme plays a vital role in improving the knowledge and attitude of female sex workers. (**Uma Maheswari, 2011**)

An experimental study was conducted by **Shoba.E.Merina., (2008)** to evaluate the quality of life of women with cancer cervix who are receiving radiation therapy with chemotherapy before and after a care module in the selected wards of Christian fellowship community health centre, Ambilikkai.Cluster random sampling method was used to select 60 samples, 30 for control group and 30 samples for the experimental group. A care module was administered to the experimental group and only assessment was done to the control group. Knowledge questionnaire self rating scale anxiety scale used to collect the data. It was evident from the study finding that there is improvement in knowledge among the experimental group and there was no reduction in the anxiety level and there was no input of quality of life among the control group and experimental group but there was as sustaining effort to maintain the quality of life with the stressors of treatment like radiation therapy and chemotherapy.

SUMMARY

This chapter had dealt with the review of research literature related to the problem stated. It has helped the researches to understand the impact of the problem under study. It also enabled the researcher to design the study to develop the tool to plan for data collection procedure and to analyze the data. The literatures collected comprised of from 23 primary sources and 5 secondary sources.

CHAPTER -III

RESEARCH METHODOLOGY

This chapter deals with the research approach, research design ,variables under the study, setting of the study, population of the study, sample, sample size ,sampling technique, criteria for selection of the sample, description of the interventions, Procedure for data collection, method of data analysis and the report of pilot study.

RESEARCH APPROACH

Evaluative approach was used for this study.

RESEARCH DESIGN

Experimental design, with pretest and posttest control group design was chosen for the study to evaluate the effectiveness of video assisted teaching programme on knowledge and attitude towards the hazards of plastic usage among selected Govt. higher secondary school students in Dindigul.

The design can be represented as:

Pretest	Manipulation	Posttest
E- RO_1	X	RO_2
C- RO_1	-	RO_2

Key:

E-Experimental group

C-Control group

R-Randomization

O_1- Pre test

X -video assisted teaching programme on hazards of plastic usage

O_2-Post test

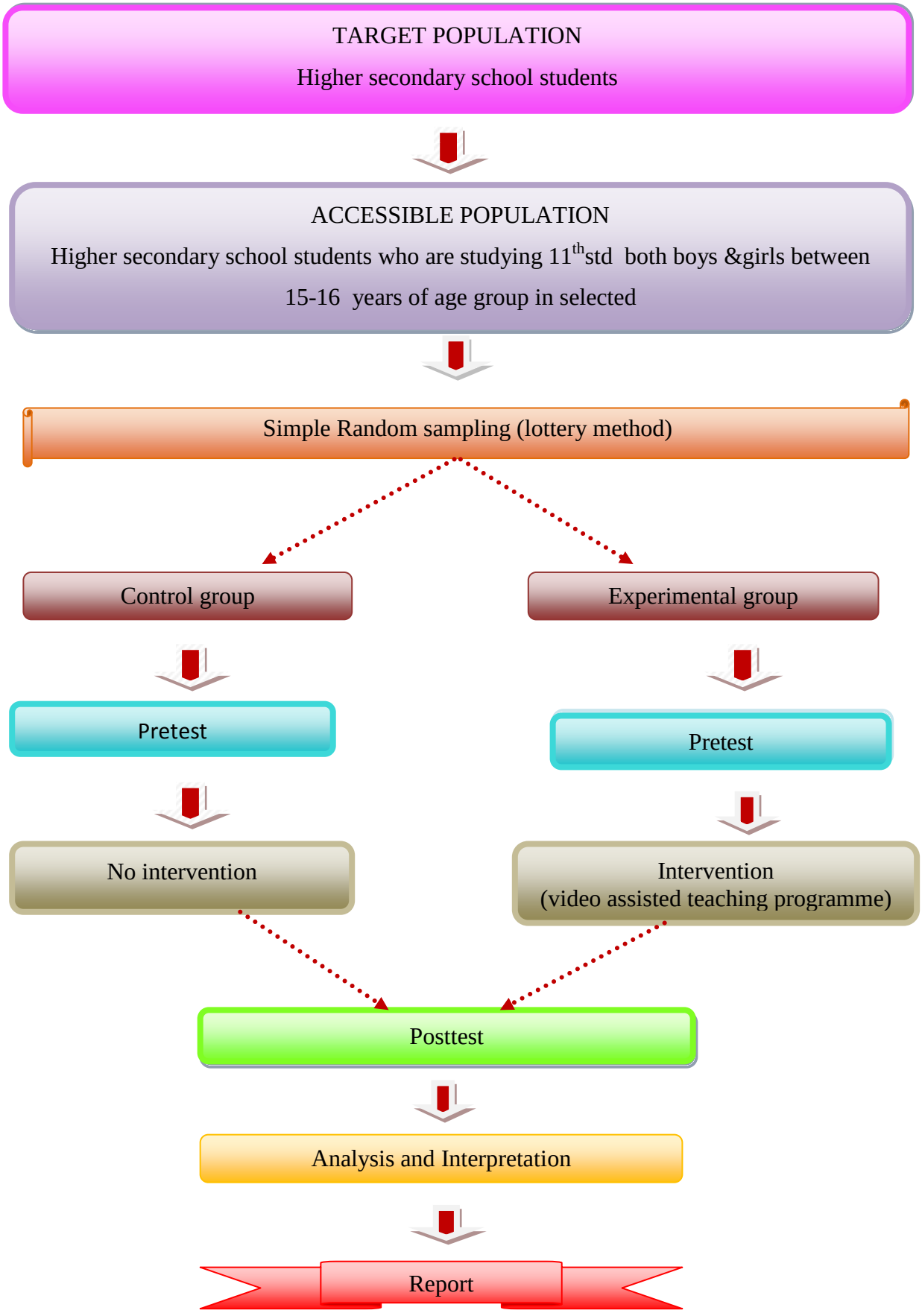

FIG : 2 SCHEMATIC REPRESENTATION OF RESEARCH DESIGN

RESEARCH VARIABLES

Dependent variables:

Knowledge and attitude of higher secondary school students towards the hazards of plastic usage.

Independent variables:

Video assisted teaching programme on hazards of plastic usage.

Extraneous variables:

Demographic variables includes age,Sex,Father's education, Mother's education,Father's occupation,Mother's occupation,Area of residence, family incomeandSource of information.

SETTING OF THE STUDY

This study was conducted in selected Govt.higher secondary schools at Dindigul. It was about 27 km away from the college.The total students is1180 among 148 students studying 11th standard.

POPULATION

The **target population** is the group of population that the researcher aims to and to whom the study findings will be generalized. In this study the target population comprises of all the higher secondary school students.

The **accessible population** in this study isselected Govt. higher secondary school students who are studying 11thstd both boys &girls between 15 and16 years of age group inDindigul.

SAMPLE

Higher secondary school students studying 11^{th} standard between 15 and16 years of age group.

SAMPLING TECHNIQUES

Simple Random sampling method (lottery method) was used to select 80 students out of 148 from Govt.higher secondary schools students in Dindigul.

CRITERIA FOR SAMPLE SELECTION

Inclusion Criteria

The study includes students

- Both sexes from 15 and 16years of age group.
- Studying inGovt.higher secondary Schools at Dindigul.
- Who are willing to participate to thisstudy.
- Who are available on the day of data collection.
- Studying11^{th} standard.

Exclusion Criteria

The study excludedstudents

- Below 15& above16 years of age group.
- Who are notwilling to participate to thisstudy.
- Who are not available on the day of data collection.
- Studying in private schools.

DESCRIPTION OF THE INSTRUMENT

The instrument consists of three parts

- Part-1 : Demographic data.

- Part-2: structured knowledge questionnaire.
- Part-3: likert type scale.

PART-1

Demographic Variables

- Demographic variables includes age, Sex ,Father's education, Mother's education, Father's occupation, Mother's occupation, Area of residence, family income and Source of information.

PART-2

Self administered structured questionnaire

To assess knowledge related to hazards of plastic usage. It consisting of 25 items.It is based on

- Introduction of Plastic-2
- Types of plastic -6
- hazards of plastic -8
- Disposal of the plastic wastes -1
- Prevention of plastic hazards -8

Scoring Procedure

Each item was a multiple choice question with 1 correct answer and 3 distracters. A score of 1 was given for the right answer and 0 for wrong answer.

0 - 50% inadequate knowledge

51 - 75% moderate knowledge

76 - 100% adequateknowledge

PART-3

Likert type attitude scale

To assess the attitude regarding hazards of plastic usage among higher secondary school students. It consists of 15 statements.

Scoring Procedure

Positive attitude - 76 -100%

Neutral attitude -51 - 75%

Negative attitude - 0 - 50%

INTERVENTION

The investigator made video programme with review of literature and with the expert's opinion.The content of video assisted teaching programme towards the hazards of plastic usage includes introduction of plastic, components and uses of plastic, types, hazards of plastic, effects, disposal of the plastic hazards and prevention of plastic hazards. The time taken for the programme was around 30 minutes.

ETHICAL CONSIDERATIONS

Institutional Human Ethical Committee clearance was obtained. Permission was obtained to conduct the study in the selected Govt.higher secondary Schools at Dindigul District. Participants were informed about the study and written consent was obtained from the individual participants. The participants were told that they were under the obligation to participate in this study.

VALIDITY

The tool was validated by 5 nursing experts, one medical officer and one statistics expert. The experts were requested to check the relevance, sequence and

adequacy of the items in the Rating scale.Based on their valid suggestion a few items were modified and final tool was prepared as per the suggestions given by the experts.

RELIABILITY

The reliability of the tool was assessed using test-retest method and the 'r' value was computed. The knowledgequestionnaire is reliable at r = 0.8 and attitude at r = 0.9 .The tool was found to be highly reliable to conduct the study.

PILOT STUDY

Pilot study was conducted to find out the reliability of the tool and feasibility of conducting the study. Study was conducted for a period of one week from 15.7.13 to 21.7.13 at Devangarhigher secondary school in Chinnalapatti and VidhyaParthi higher secondary school in Dindigul.Study was conducted with 8 samples. The sample who met inclusion and exclusion criteria was selected by using simple Random sampling technique.Informed consent was obtained from each person. The administration of the tool and intervention through video assisted teaching programme were implemented.The video was run around 30 minutes. Practicability of the tool was checked to conduct the main study.

DATA COLLECTION PROCEDURE

The main study was conducted in the month of August 2013 in Govt. Higher secondary Schools at Dindigul District. 80 students,who met withinclusion and exclusion criteria were selected by using simple Random sampling technique .Informed consent was obtained from each participants. The investigator established good rapport with persons through an informative talk about the purpose of the study was explained to the persons of the study to ensure their cooperation.

The data collection procedure was held in control group 2 phases. In the 1st phase, knowledge and attitude towards the hazards of plastic usage was assessed.During the second phase, post test was conducted to the same group with same structured knowledge questionnaire after one week.

The data collection procedure was held in 3 phases, In the first phase in experimental group, knowledge and attitude on hazards of plastic usage was assessed, During the second phase, the video assisted teaching programme was administered among higher secondary school students in Dindigul district.

The video was run around 30 minutes, At the end of the programme, content of the programmed was discussed among the group for another 15 minutes. The post test was administered to the same group with same structured knowledge questionnaire after one week of video assisted teaching programme.

All the subjects were very much cooperative& investigator expressed her attitude for their cooperation.

PLAN FOR DATA ANALYSIS

The data was analyzed in terms of the objectives of the study using descriptive and inferential statistics. The plan of data analysis was follows.

- Organize the data in a master data sheet.
- Frequency and percentage distribution were used to analyze the demographic variable for higher secondary school students.
- Frequency and percentage distribution were used to assess the level of knowledge and attitude of higher secondary school students.

- Mean, percentage, standard deviation,paired and unpaired ‘t’ were used to assess and compare the pretest and posttest knowledge and attitude.
- Karl Pearson correlation coefficient and chi square test also were used to analyze correlation and association of the data.

SUMMARY

This chapter dealt with research approach, research design, settings, population, sample, sampling technique, sampling criteria, selection and development of study instruments, data collection procedure and plan for data analysis.

CHAPTER-IV

ANALYSIS AND INTERPRETATION

This chapter deals with analysis and interpretation of data collection, it includes both descriptive and inferential statistics. Statistics is a field of study concerned with techniques or methods of data, classification, summarizing, interpretation drawing inferences, testing of hypothesis, making recommendations etc. (Mahajan,2004)

The data was collected from 80 higher secondary school students studying 11^{th}std between the age group of 15 and 16 years among them 40 students were in control group, 40 students in experimental group. This was done to determine the effectiveness of video assisted teaching programme on knowledge and attitude towards the hazards of plastic usage. The data were analyzed according the objectives and hypothesis of the study. Data analysis was computed after all the data was transferred to the master data coding sheet. The researcher used the descriptive and inferential statistics for data analysis.

The data was analyzed tabulated and interpreted using descriptive and inferential using statistics in the sequence as follows.

Organization of findings

The analyzes of the data were organized under following headings.

- Frequency and percentage distribution of demographic variables of higher secondary school students.

- Frequency and percentage distribution of level of knowledge towards the hazards of plastic usage among higher secondary school students
- Frequency and percentage distribution of pretest and posttest level of attitude on hazards of plastic usage among higher secondary school students
- Comparison of level of knowledge before and after video assisted teaching programme in control and experimental groups through paired ‘t’ test.
- Comparison of level of knowledge by control and experimental groups of higher secondary school students usingUnpaired ‘t’ test.
- Comparison of attitude before and after video assisted teaching programme in control and experimental groups of higher secondary school students through paired ‘t’ test.
- Comparison of attitude by control and experimental groups of higher secondary school students using unpaired ‘t’ test.
- Correlation between level of knowledge and attitude on hazards of plastic usage among higher secondary school students in control and experimental groups.
- Association between selected demographic variables and level of knowledge of higher secondary school students in control group.
- Association between selected demographic variables and attitude of higher secondary school students in control group.
- Association between selected demographic variables and level of knowledge of higher secondary school students in experimental group.
- Association between selected demographic variables and attitude of higher secondary school students in experimentalgroup.

Table-1:Frequency and percentage distribution of demographic variables of higher secondary school students.

(N=80)

Sample characteristics	Control group (n=40)		Experimental group (n=40)	
Demographic variables	**f**	**%**	**f**	**%**
1.Sex :				
a.Male	20	50	20	50
b.Female	20	50	20	50
2.Father's education :				
a. No formal education	11	8	10	25
b. High school	16	40	8	20
c. Higher secondary	4	10	11	27.5
d. UG & PG	5	12	6	15
e. Above	4	10	5	12.5
3.Father's occupation :				
a. Unemployed	-	-	1	2.5
b. Govt.employee	1	2.5	-	-
c. Private employee	1	2.5	2	5
d. Business	9	22.5	8	20
e. Coolie	29	72.5	29	72.5
4.Mother's occupation :				
a. Unemployed	22	55	29	72.5
b. Private employee	2	5	1	2.5
c. Business	-	-	3	7.5
d. Coolie	16	40	7	17.5
5.Area of Residence:				
a. Urban	-	-	24	60
b. Rural	40	100	16	40
6.Family income :				
a. Rs.3000-5000	22	55	11	27.5
b. Rs.5001-8000	13	32.5	25	62.5
c. Rs.8001-10000	5	12.5	4	10
7.Source of information:				
a. Television	30	75	33	82.5
b. Radio	7	17.5	5	12.5
c. News paper	3	7.5	2	5

The table -1 revealed that,The sex of the students is equally distributed (50%, 50%),very few of the students father's education (10%,12.5%) were above post graduates. Most of the students father's occupation (72.5%,72.5%) is coolie, and mother's (55%,72.5%) are un employee. Majority of the Students are from rural area of residence (100%) and source of information (75%,82.5%) were television. very few (12.5%,10%) were had the family income of the group between control and experimental groups.

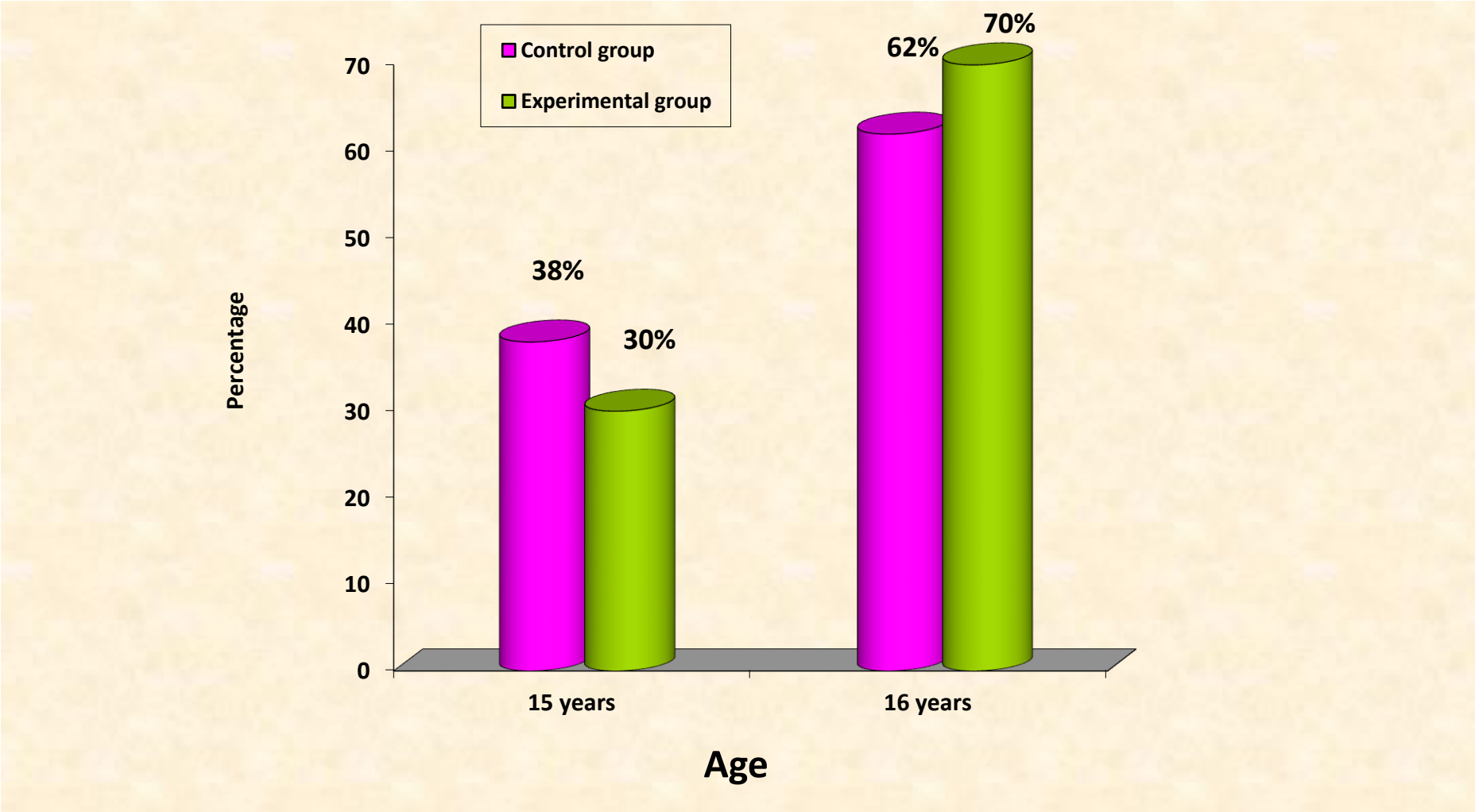

Fig-3:Percentage distribution of Age of the higher secondary school students

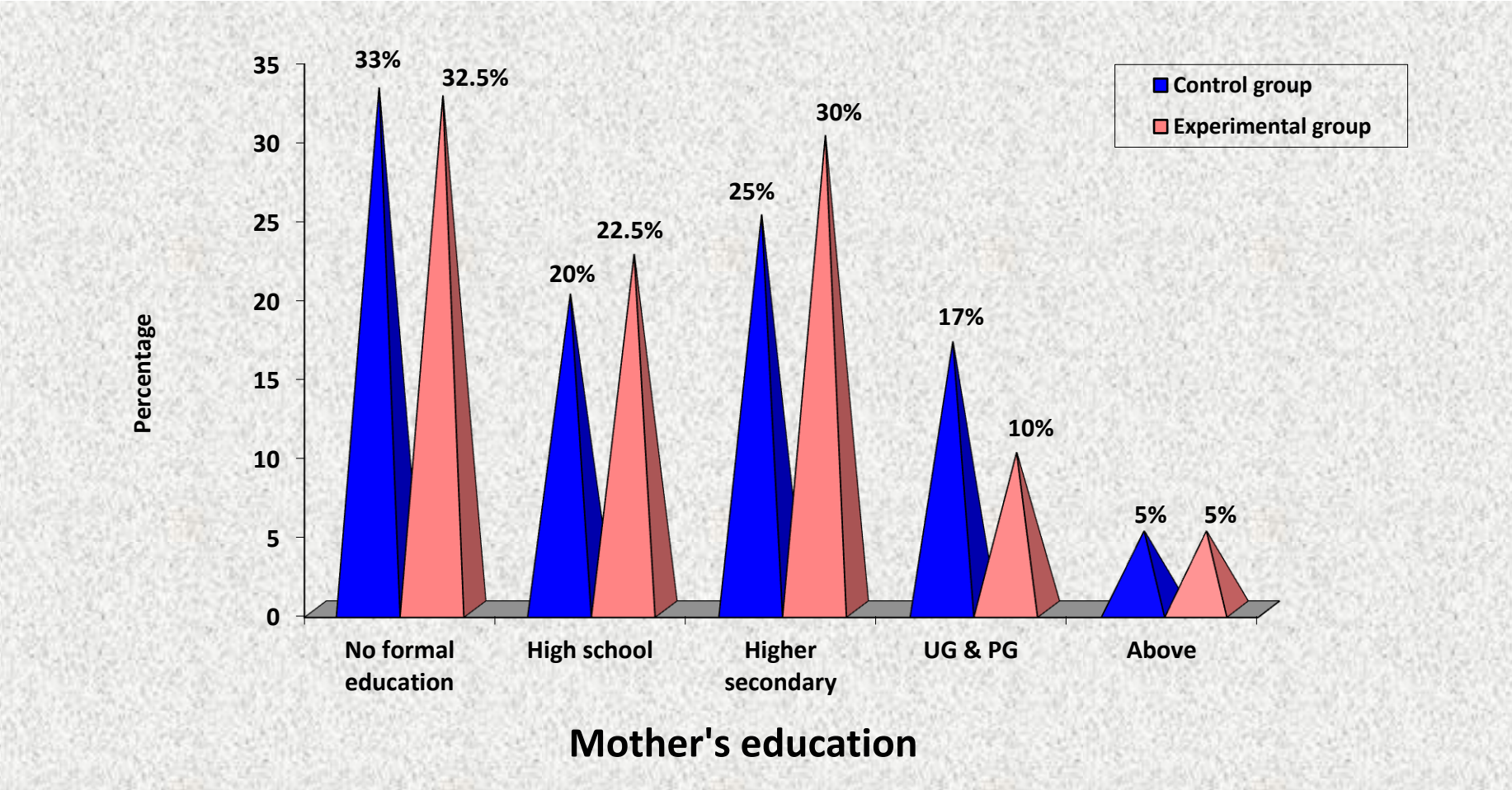

Fig-4:Percentage distribution of mother's education of the higher secondary school students

Table-2: Frequency and percentage distribution of level of knowledge towards the hazards of plastic usage among higher secondary school students

Level of Knowledge	Control Group				Experimental Group			
	Pre test		Post test		Pre test		Post test	
	f	%	f	%	f	%	f	%
Inadequate	24	60	10	25	17	42.5	1	2.5
Moderate	16	40	30	75	23	57.5	11	27.5
Adequate	-	-	-	-	-	-	28	70

The above table-2 revealed that, majority of the students in control group (60%) had inadequate knowledge and experimental group (57.5%) had moderately knowledge in the pretest score. Where as the posttest level of knowledge that few in control group (25%) and very few in experimental group (2.5%) had inadequate knowledge.

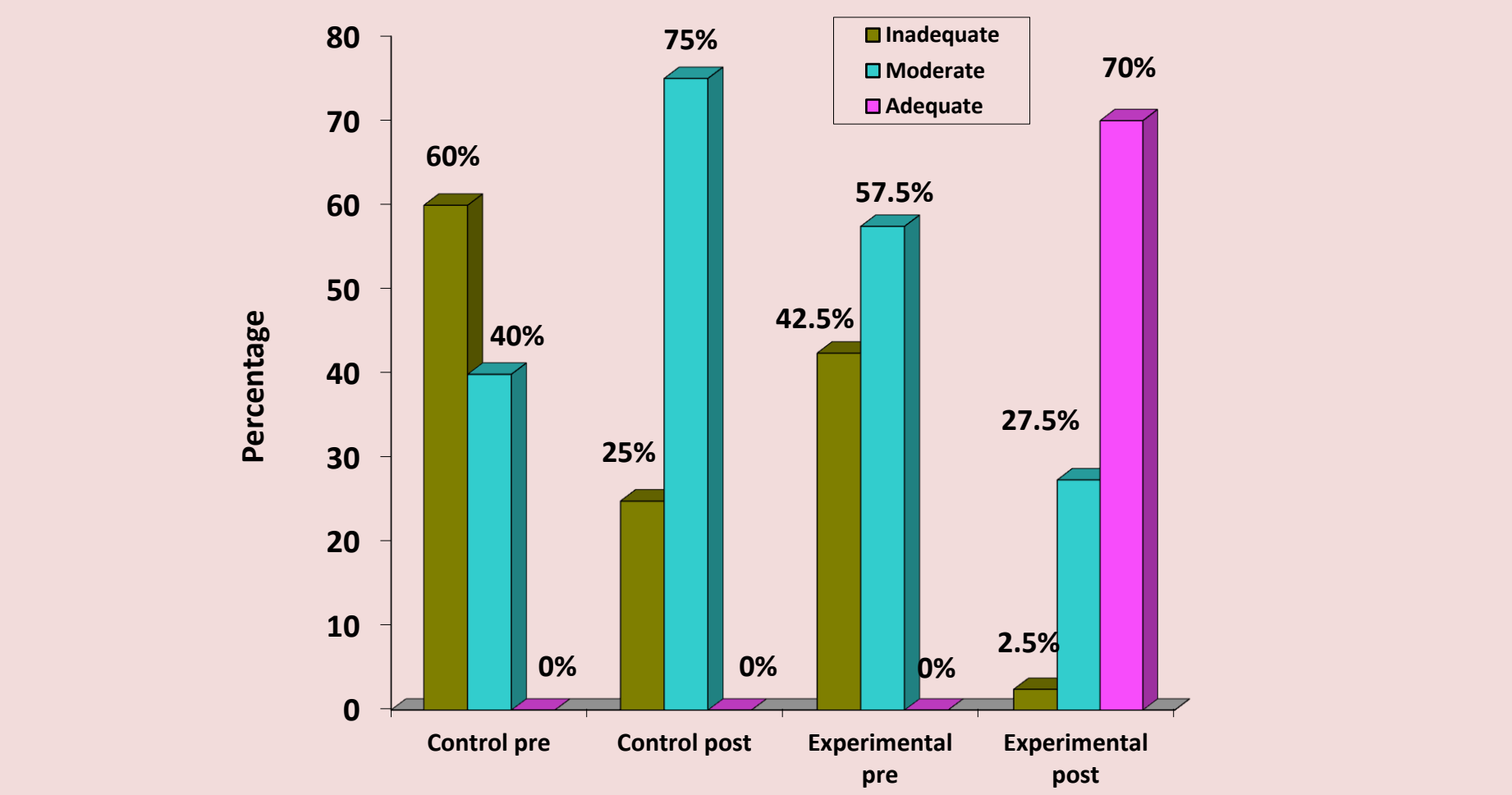

Fig-5:Percentage distribution of level of knowledge of higher secondary school students

Table-3: Frequency and percentage distribution of pretest and posttest level of attitude on hazards of plastic usage among higher secondary school students

Level of attitude	Control group				Experimental group			
	Pre test		Post test		Pre test		Post test	
	f	%	f	%	f	%	f	%
Negative	3	7.5	10	25	4	10	-	-
Neutral	35	87.5	30	75	20	50	9	22.5
Positive	2	5	-	-	16	40	31	77.5

The above table-3 showed that most of the students in control (87.5) and experimental(50%) groups had neutral attitude. But after video assisted teaching programme majority of the students in experimental group(77.5%) developed positiveattitudetowardsthehazardsof plastic usage.

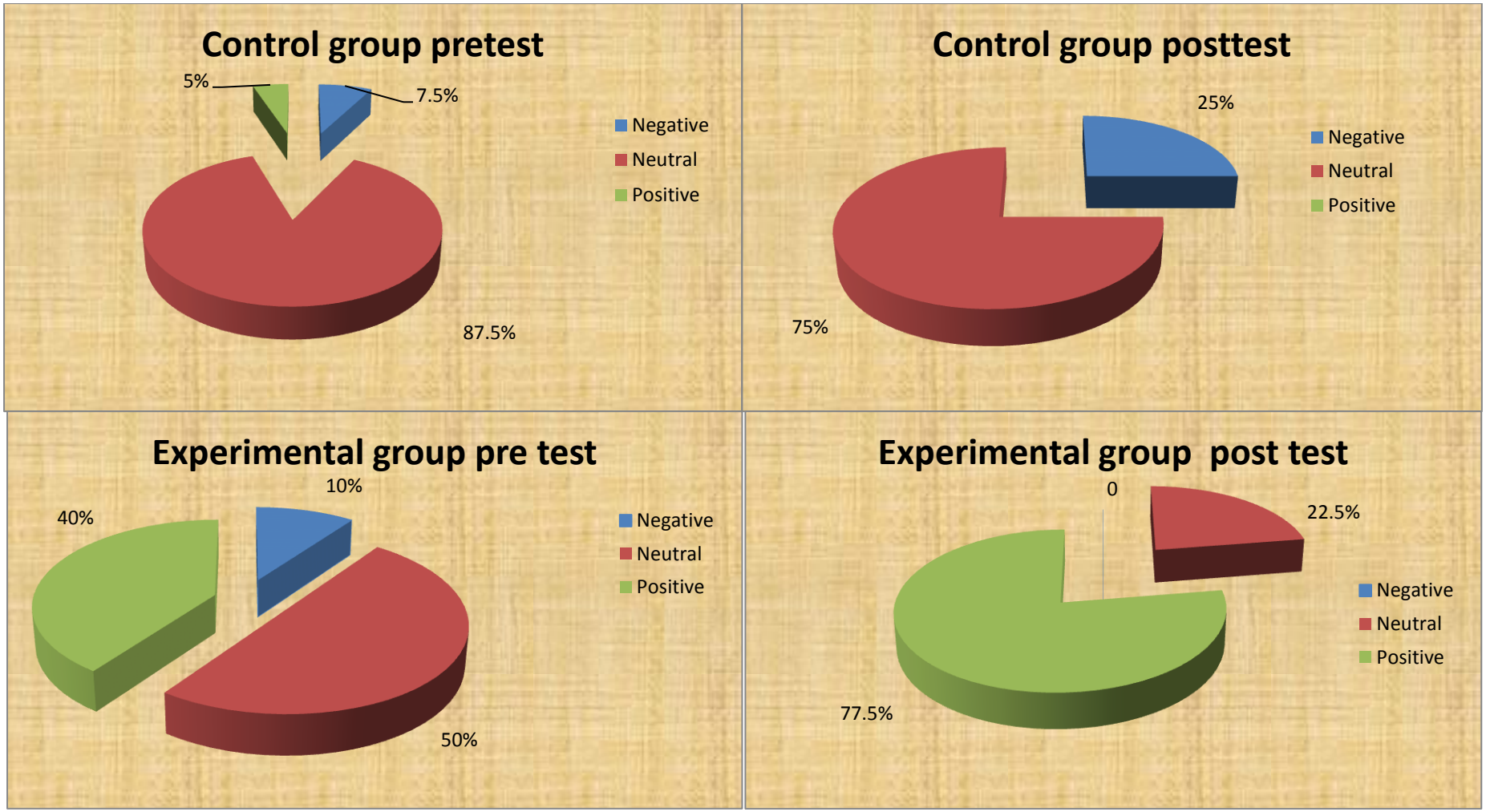

Fig-5: Percentage distribution of level ofattitude of higher secondary school students

Table-4: Comparison of level of knowledge before and after video assisted teaching programme in control and experimental groups through paired 't' test

Group	n	pre test		post test		Mean difference	't'-value
		Mean	SD	Mean	SD		
Control Group	40	12.95	2.72	14.68	2.45	1.75	4.43***
Experimental group	40	13.65	3.07	20.5	2.69	6.85	14.56***

***- P<0.001, Highly significant

The above table revealed that the obtained 't' value was found to be highly significant. It was inferred that the higher secondary school students exposed to the video Programme had significant increase in post test level of knowledge and it was statistically significant at p<0.001. Thus research hypothesis $H_1$is accepted.

Table-5: Comparison of level of knowledge by control and experimental groups of higher secondary school students using Unpaired 't' test

Group	n	Mean	SD	Mean difference	't'-value
Control Group	40	14.68	2.45	5.825	10.10***
Experimental group	40	20.5	2.69		

*** - P<0.001, Highly significant

The result revealed that, the obtained 't' value found to be statistically significant at P<0.001. Hence H_2 was accepted. This showed that the video assisted teaching programme was effective in improving the level of knowledge regarding hazards of plastic usage among higher secondary school students.

Table-6: Comparison of attitude before and after video assisted teaching programme in control and experimental groups of higher secondary school students through paired 't' test

Group	n	pre test		post test		Mean difference	't'-value
		Mean	SD	Mean	SD		
Control Group	40	47.7	6.95	49.15	7.21	1.45	4.95***
Experimental group	40	52.43	10.7	61.42	6.94	9	5.46***

*** - P<0.001, Highly significant

The above table revealed that obtained 't' value was found to be highly significant. It was inferred that the higher secondary school students exposed to the video assisted teaching programme had significant increase in post test attitude and it was statistically significant at P<0.001. Thus research hypothesis H_3 is accepted.

Table-7: Comparison of attitude by control and experimental groups of higher secondary school students using Unpaired 't' test

Group	n	Mean	SD	Mean difference	't'-value
Control Group	40	49.15	7.21	12.275	7.75***
Experimental group	40	61.42	6.94		

***, - P<0.001, Highly significant

The result revealed that the obtained 't' value found to be statistically significant at P<0.001. Hence $H_4$was accepted. This showed that the video assisted teaching programme was effective in promoting the attitude regarding hazards of plastic usage among higher secondary school students.

Table-8: Correlation between level of knowledge and attitude on hazards of plastic usage among higher secondary school students in control and experimental groups

Group	"r"-value
Control	0.131
Pre-Knowledge and attitude	
Post -Knowledge and attitude	0.157
Experimental	-0.103
Pre-Knowledge and attitude	
Post -Knowledge and attitude	0.414***

***- P<0.001, Highly significant

The above table revealed that, there was a correlation (r=0.414) between posttest level of knowledge and level of attitude at P<0.001. It was inferred that there was a positive correlation between posttest knowledge and attitude of hazards of plastic usage in experimental group. Thus H_5 research hypothesis is accepted

Table-9: Association between selected demographic variables and level of knowledge of higher secondary school students in control group

(N=80)

Demographic variables	Inadequate		Moderate		$\chi 2$
	f	%	f	%	
Age(in years):					
a.15 years	2	5	13	33	1.74
b.16 years	8	20	17	42	
Father's education :					
a.No formal education	3	7.5	8	20	
b.High school	5	12.5	11	27.5	3.63
c.Higher secondary	0	0	4	10	
d.UG & PG	2	5	3	7.5	
e.Above	0	0	4	10	
Mother's education:					
a.No formal education	3	7.5	10	25	
b.High school	3	7.5	5	12.5	3.93
c.Higher secondary	3	7.5	7	17.5	
d.UG & PG	0	0	7	17.5	
e.Above	1	2.5	1	2.5	
Father's occupation :					
a.Govt.employee	0	0	1	2.5	
b.Private employee	0	0	1	2.5	2.77
c.Business	4	10	5	12.5	
d.Coolie	6	15	23	57.5	
Mother's occupation :					
a.Unemployed	6	15	16	40	0.73
b.Private employee	0	0	2	5	
c.Coolie	4	10	12	30	
Family income :					
a.Rs.3000-5000	6	15	16	40	0.15
b.Rs.5001-8000	3	7.5	10	25	
c. Rs.8001-10000	1	2.5	4	10	
Source of information					
a.Television	8	20	22	55	1.09
b.Radio	2	5	5	12.5	
c.News paper	0	0	3	7.5	

The above table-9 showed that, there was no significant association between level of knowledge of higher secondary school students and demographic variables in control group. The posttest related to the demographic variables were not true difference and only by chance and the research hypothesisH_6 is rejected.

Table-10: Association between selected demographic variables and attitude of higher secondary school students in control group

(N=80)

Demographic variables	Negative		Neutral		positive		χ^2
	f	%	f	%	f	%	
Age(in years):							
a.15 years	0	0	14	35	1	2.5	1.67
b.16 years	2	5	20	50	3	7.5	
Sex :							
a.Male	1	2.5	15	37.5	4	10	4.48
b.Female	1	2.5	19	47.5	0	0	
Father's education :							
a.No formal education	1	2.5	10	25	0	0	
b.High school	1	2.5	14	35	1	2.5	
c.Higher secondary	0	0	3	7.5	1	2.5	11.006
d.UG & PG	0	0	5	12.5	0	0	
e.Above	0	0	2	5	2	5	
Mother's education:							
a.No formal education	1	2.5	11	27.5	1	2.5	
b.High school	1	2.5	7	17.5	0	0	
c.Higher secondary	0	0	9	22.5	1	2.5	5.76
d.UG & PG	0	0	5	12.5	2	5	
e.Above	0	0	2	5	0	0	
Father's occupation :							
a.Govt.employee	0	0	1	2.5	0	0	
b.Private employee	0	0	1	2.5	0	0	2.68
c.Business	0	0	9	22.5	0	0	
d.Coolie	2	5	23	57.5	4	10	
Mother's occupation :							
a.Unemployed	1	2.5	18	45	3	7.5	
b.Private employee	0	0	2	5	0	0	0.96
c.Coolie	1	2.5	14	35	1	2.5	
Family income :							
a.Rs.3000-5000	0	0	20	50	2	5	
b.Rs.5001-8000	2	5	9	22.5	2	5	5.65
c.Rs.8001-10000	0	0	5	12.5	0	0	
Source of information							
a.Television	2	5	26	65	2	5	
b.Radio	0	0	5	12.5	2	5	3.95
c.News paper	0	0	3	7.5	0	0	

The above table-10 showed that,there was no significant association between attitude of higher secondary school students and demographic variables in control group. The posttest related to the demographic variables were not true difference and only by chance and the research hypothesis$H_6$is rejected.

Table-11:Association between selected demographic variables and level of knowledge of higher secondary school students in experimental group

(N=80)

Demographic variables	Inadequate		Moderate		Adequate		χ^2
	f	%	f	%	f	%	
Age(in years):							
a.15 years	1	2.5	4	10	7	17.5	2.88
b.16 years	0	0	7	17.5	21	52.5	
Sex :							
a.Male	0	0	4	10	16	40	2.39
b.Female	1	2.5	7	17.5	12	30	
Father's education :							
a.No formal education	0	0	1	2.5	9	30	
b.High school	0	0	2	5	6	20	5.45
c.Higher secondary	1	2.5	4	13	6	20	
d.UG & PG	0	0	2	5	4	13	
e.Above	0	0	2	5	3	7.5	
Mother's education:							
a.No formal education	1	2.5	2	5	10	25	
b.High school	0	0	5	12.5	4	10	8.86
c.Higher secondary	0	0	4	10	8	20	
d.UG & PG	0	0	0	0	4	10	
e.Above	0	0	0	0	2	5	
Father's occupation :							
a.Unemployed	0	0	1	2.5	0	0	
b.Private employee	0	0	0	0	2	5	6.36
c.Business	0	0	4	10	4	10	
d.Coolie	1	2.5	6	15	22	55	

Mother's occupation :							
a.Unemployed	1	2.5	5	12.5	23	57.5	
b.Private employee	0	0	0	0	1	2.5	
c.Business	0	0	3	7.5	0	0	10.85
d.Coolie	0	0	3	7.5	4	10	
Area of Residence:							
a.Urban	1	2.5	6	15	17	42.5	0.809
b.Rural	0	0	5	12.5	11	27.5	
Family income :							
a.Rs.3000-5000	0	0	4	10	7	17.5	
b.Rs.5001-8000	1	2.5	7	17.5	17	42.5	2.61
c.Rs.8001-10000	0	0	0	0	4	10	
Source of information							
a.Television	1	2.5	10	25	22	55	
b.Radio	0	0	1	2.5	4	10	1.34
c. News paper	0	0	0	0	2	5	

The above table showed that, there was no significant association between level of knowledge of higher secondary school students and demographic variables in experimental group. The post test related to the demographic variables were not true difference and only by chance and the research hypothesis H_6 is rejected.

Table-12: Association between selected demographic variables and attitude of higher secondary school students inexperimental group

(N=80)

Demographic variables	Neutral		Positive		$\chi 2$
	f	%	f	%	
Age(in years):					
a.15 years	4	10	8	20	1.15
b.16 years	5	12.5	23	57.5	
Sex :					
a.Male	5	12.5	15	37.5	0.14
b.Female	4	10	16	40	
Father's education :					
a.No formal education	2	5	8	20	
b.High school	1	2.5	7	17.5	1.84
c.Higher secondary	4	10	7	17.5	
d.UG & PG	1	2.5	5	12.5	
e.Above	1	2.5	4	10	
Mother's education:					
a.No formal education	3	7.5	10	25	
b.High school	2	5	7	17.5	
c.Higher secondary	3	7.5	9	22.5	2.07
d.UG & PG	0	0	4	10	
e.Above	1	2.5	1	2.5	
Father's occupation :					
a.Unemployed	1	2.5	0	0	
b.Private employee	1	2.5	1	2.5	4.81
c.Business	2	5	6	15	
d.Coolie	5	12.5	24	60	
Mother's occupation :					
a.Unemployed	4	10	25	62.5	
b.Private employee	0	0	1	2.5	6.57
c.Business	1	2.5	2	5	
d.Coolie	4	10	3	7.5	

Area of Residence:					
a.Urban	8	20	16	40	4.03
b.Rural	1	2.5	15	37.5	
Family income :					
a.Rs.3000-5000	0	0	11	27.5	4.51
b.Rs.5001-8000	8	20	17	42.5	
c. Rs.8001-10000	1	2.5	3	7.5	
Source of information					
a.Television	8	20	25	62.5	0.656
b.Radio	1	2.5	4	10	
c. News paper	0	0	2	5	

The above table showed that, there was no significant association between attitude of higher secondary school students and demographic variables in experimental group. The posttest related to the demographic variables were not true difference and only by chance and the research hypothesis H_6 is rejected.

SUMMARY

This chapter has dealt with data analysis and interpretation of the study based on the hypothesis. Both descriptive and inferential statistics were used to analyze the data collected from 80 higher secondary school students. The findings were distributed and presented in 12 tables and 4 figures. Frequency, percentage, mean, standard deviation, table of significance and association were used in order to identify the effectiveness of video assisted teaching programme on knowledge and attitude towards the hazards of plastic usage among higher secondary school students was noted between the control and experimental groups. Significant differences in the knowledge and attitude by the experimental group were increased than the control group. This was statistically significant at $P<0.001$.

CHAPTER - V

DISCUSSION

This study was conducted to evaluate the effectiveness of video assisted teaching programme on knowledge and attitude towards the hazards of plastic usage among selected higher secondary school students in Dindigul.

A simple random sampling technique was used to collect data from the study participants. 80 samples were taken, 40 in experimental and 40 in control group. Pretest and post test was conducted. The Data were collected for a period of six weeks at Govt.Higher secondary school, in Dindigul.The discussion was based on the objectives of this study.

The first objective of this study were assess the existing level of knowledge and attitude towards the hazards of plastic usage among higher Secondary school Students.

The finding showed that, majority of the students in control group (60%) had inadequate knowledge and experimental group (57.5%) had moderately knowledge in the pretest score. Where as the posttest level of knowledge that few in control group (25%) and very few in experimental group (2.5%) had inadequate knowledge.

The finding were supported by ceena,PA(2005) which was conducted among 100 high school students about knowledge regarding hazards on plastic usage. The over all response pattern showed that the knowledge score of posttest had only a moderate level of awareness about hazards of plastics.

The finding showed that, most of the students in control (87.5) and experimental(50%) groups had neutral attitude. But after video assisted teaching programme majority of the students in experimental group(77.5%) developed positive attitudetowardsthehazards of plastic usage.

The above findings were significantly consistent with the study conducted by Kate elizabeth miller (2011) a study was conducted at the University of Alabama campus, to assess attitudes and behaviors of students related to plastic bags. A survey was developed and administered to 162 students on campus.The research background in conjunction with the data collected indicated these findings. First, students' dominant attitude toward single-use plastic bags is not consistent with dominant behavior or how they use plastic bags, and present stimuli in many retail environments are strong enough that students generally use plastic bags despite conflicting attitudes. Second, though surveyed students are aware of problems associated with the plastic bag, these items are a valued part of some students' shopping experiences.

The second objectives of this study to evaluate the effectiveness of video assisted teaching programme on knowledge and attitude towards the hazards of plastic usage among higher secondary school students.

The findings showed that the 't' value of pretest and posttest level of knowledge in control(t-4,43) and experimental group of higher secondary school students was statisticallysignificant (t-14.56) at $P<0.001$.

The 't' value obtained in level of knowledge between control and experimental group of higher secondary school students(t-10.10) was found statistical

significant at P<0.001.Thus it indicated the video assisted teaching programme was effective in improving the level of knowledge regarding hazards of plastic usage.

In this study the level of attitude before and after video assisted teaching programme in control group (t-4.95) and experimental group (t-5.46) was found statistically significant at P<0.001.

The‘t’ value (7.75) was obtained for control and experimental groups regarding level of attitude of higher secondary school students. The differences was statistically significant at P<0.001 level.It concluded that video assisted teaching programme was effective in promoting the attitudes of thehigher secondary school students regarding hazards of plastic usage.

The above findingssupported by**Nobel Mathew(2012)**conducted a study to assess the effectiveness of video assisted teaching programme on knowledge and attitude regarding smoking and smokeless tobacco use and its health hazards in Bangalore.100 girls and boys of school students were used as samples. The data collected were analyzed and interpreted based on descriptive and inferential statistics. In pre-test, 35(70%) boys and 41 (82%) girls had poor knowledge, 15(30%) boys and 9 (18%) girls had average knowledge and none of the sample had good knowledge. Whereas in posttest none of the students had poor knowledge, 13 (26.0%) boys and 22 (44%) girls had average knowledge and 37 (74.0%) boys and 28 (56%) girls have gained good knowledge regarding smoking and smokeless tobacco use and its health hazards. In pre-test, only 23(54%) boys and 11 (22%) girls had positive attitude towards non tobacco use and tobacco control programme and 27(46%) boys and 39 (78%) girls had negative attitude towards non tobacco use and tobacco control programme. But in posttest majority 48 (96%) boys and 50 (100%) girls showed

positive attitude towards non tobacco use and tobacco control programme. There was significant difference between mean posttest knowledge score of boys (18.36) and mean pretest knowledge score (7.48). The finding of the present study reveals that there is a significant gain in knowledge and change in attitude among school students following video assisted teaching programme. Therefore such program may be used to promote awareness among school students regarding tobacco use and its ill effects on health.

The third objective of this study was to correlate the knowledge with attitude towards the hazards of plastic usage among higher secondary school students.

This showed that there was a positive correlation (r=0.414) between posttest level of knowledge and level of attitude.It was statistically significant at P<0.001. It was inferred that there was a significant correlate between posttest knowledge and attitude of hazards of plastic usage inexperimental group. This indicates that the attitude of the students can be influenced by knowledge and vise versa.

The above findings were significantly consistent with the study conducted by **Criscitiello,(2008)**to assess the knowledge, attitude and practices of students regarding plastic waste management. Karimnagar town (Andhra Pradesh) has a population of 5.2 lacs. It has 267 students in the community. Out of 267students, 47 were selected by systematic random sampling. A total of 500 study subjects were selected from these community and the data were collected by one to one interview using pre-tested pre-designed proforma. The result of this study is 30 % of students dispose the plastic properly.Others need proper health education regarding plastic disposal**.**

The fourth objective of this study of this study was to find out the association between posttest knowledge and selected demographic variables.

There was no significant association between level of knowledge of higher secondary school students and demographic variables in control group. The posttest related to the demographic variables were not true difference and only by chance and the research hypothesisH_6 is rejected.

There was no significant association between level of knowledge of higher secondary school students and demographic variables in experimental group. The posttest related to the demographic variables were not true difference and only by chance and the research hypothesis H_6 is rejected.

The findings was supported by sabin peter (2012) the findings of a study to assess the effectiveness of peer mediated teaching on knowledge regarding hazards of plastic usage among school children, 66 school children's data's were analyzed, He found out that there was no significant association between the pretest and posttest level of knowledge of school children and their selected demographic variables.

The present study was supported by Lithner, (2011)at the University of Gothenberg, Sweden studied the knowledge of school children regarding harmful effects of plastics among high school students and found that there was no association on the level of knowledge and the selected demographic variables.

The fifth objective of the study was to findout the association between posttest attitude and selected demographic variables.

There was no significant association between attitude of higher secondary school students and demographic variables in control group. The posttest related to the demographic variables were not true difference and only by chance and the research hypothesis$H_6$is rejected.

There was no significant association between attitude of higher secondary school students and demographic variables in experimental group. The posttest related to the demographic variables were not true difference and only by chance and the research hypothesis H_6 is rejected.

SUMMARY

This chapter dealt about themajor findings of the study which were discussed based on their objectives of the study,supportive findings were quoted.

CHAPTER-VI

SUMMARY,CONCLUSION,IMPLICATION AND RECOMMENDATIONS

This chapter gives brief account of the present study along with the conclusion drawn from the findings, recommendation, implication, conclusion, suggestions for further studies and nursing implications.

SUMMARY OF THE STUDY

The focus of the present study was to evaluate the effectiveness of video assisted teaching programme on knowledge and attitude towards the hazards of plastic usage among selected higher secondary school students in Dindigul.

Objectives of the study

1. To assess the existing level of knowledge and attitude towards the hazards of plastic usage among higher secondary school students.
2. To evaluate the effectiveness of video assisted teaching programme on knowledge and attitude towards the hazards of plastic usage among higher secondary school students.
3. To correlate the knowledge with attitude towards the hazards of plastic usage among higher secondary school students.
4. To find out the association between posttest knowledge and selected demographic variables
5. To find out the association between the posttest attitude and selected demographic variables

Hypothesis

H_1: There will be a significant difference in the pretest and posttest knowledge towards the hazards of plastic usage among higher secondary school students.

H_2: There will be a significant difference in the control and experimental groupsstudents knowledge towards the hazards of plastic usage among higher secondary school students.

H_3: There will be a significant difference in the pretest and posttest attitude towards the hazards of plastic usage among higher secondary school students.

H_4: There will be a significant difference in the control and experimental groups students attitude towards the hazards of plastic usage among higher secondary school students.

H_5: There will be a significant relationship between knowledge and attitude towards the hazards of plastic usage among higher secondary school students.

H_6: There will be a significant association between posttest knowledge and attitude with the selected demographic variables.

A review of related literature helped the investigator to develop the conceptual framework, tools; methodology of this study, The review of literature was organized Under the following heading,

I. Studies related to hazards on plastic usage

II. Studies related to knowledge regarding hazards on plastic usage

III. Studies related to attitude regarding hazards on plastic usage

IV. Studies related to video assisted teaching programme

The research design adopted for the study was evaluative in approach with pretest, posttest control group design. The conceptual framework of the study was based upon von bertanlanffy's general system theory of learning (1968) model.The instrument used for data collection was a structured questionnaire on hazards on plastic usage which was prepared based on the review of literature and with the help of subjects experts. The video assisted teaching was covering the introduction of plastic, types of plastic, hazards of plastic,disposal of the plastic wastes, Prevention of plastic hazards.

The tool and video assisted teaching was found to be valuable and feasible. The reliability of the tool was established by the test and retest method. Pilot was conducted in Chinnalapatty 8 samples were taken, 4 experimental and 4 control group. Pretest and post test was conducted. The pilot study helped the investigator to confirm the feasibility of carrying out the main study.

The main study was conducted in Govt.Higher secondary school,Dindigul for a period of six weeks. A simple random sampling technique was used to collect data from the study participants.

Major findings of the study were

The majority (62%,70%) of students belongs to the age group of 16 years.The sex of the students is equally distributed (50%, 50%),very few of the students father's education (10%,12.5%), mother education (5%,5%) were above post graduates. Most of the students father's occupation (72.5%,72.5%) is coolie, and mother's (55%,72.5%) are un employee. Majority of the Students are from rural area of residence (100%) and source of information (75%,82.5%) were television. very few

(12.5%,10%) were had the family income of the group between control and experimental groups.

The majority of the students in control group (60%) had inadequate knowledge and experimental group (57.5%) had moderately knowledge in the pretest score. Where as the posttest level of knowledge that few in control group (25%) and very few in experimental group (2.5%) had inadequate knowledge.

The most of the students in control (87.5) and experimental(50%) groups had neutral attitude. But after video assisted teaching programme majority of the students in experimental group(77.5%) developed positive attitude towardsthehazards of plastic usage.

The obtained 't' value of the pretest and posttest level of knowledge in control and experimental groups (4.43,14.56)was found to be highly significant. It was inferred that the higher secondary school students exposed to the video Programme had significant increase in post test level of knowledge and it was statistically significant at $p<0.001$. Thus research hypothesis $H_1$is accepted.

The 't' valueobtained in level of knowledge between control and experimental groups (10.10) wasfound to be statistically significant at $P<0.001$. Hence H_2 was accepted. This showed that the video assisted teaching programme was effective in improving the level of knowledge regarding hazards of plastic usage among higher secondary school students.

The obtained 't' value of level of attitude before and after video assisted teaching in control and experimental groups (4.95,5.46) was found to be highly significant. It was inferred that the higher secondary school students exposed to the

video assisted teaching programme had significant increase in post test attitude and it was statistically significant at P<0.001. Thus research hypothesis H_3 was accepted.

The obtained 't' value for control and experimental groups regarding level of attitude (7.75)was found to be statistically significant at P<0.001. Hence $H_4$was accepted. This showed that the video assisted teaching programme was effective in promoting the attitude regarding hazards of plastic usage among higher secondary school students.

There was a correlation (r=0.414) between posttest level of knowledge and level of attitude at P<0.001. It was inferred that there was a positive correlation between posttest knowledge and attitude of hazards of plastic usage in experimental group. Thus H_5 research hypothesis was accepted.

There was no significant association between posttest knowledge and attitude with the selected demographic variables such as age, Sex,Father's education, Mother's education, Father's occupation, Mother's occupation, Area of residence, family income and Source of information in control group and experimental groups.

CONCLUSION

The main conclusion of this present study was the video assisted teaching programme could effectively increase the knowledge and attitude towards the hazards of plastic usage among selected higher secondary school students. This study clearly stated that health education plays a vital role in improving knowledge and promoting attitude towards the hazards of plastic usage among selected higher secondary school students.

IMPLICATIONS

The findings of the study have several implications in following field. It can be discussed of four areas namely nursing practice, Nursing administration, Nursing education and Nursing research.

Nursing practice

- The study findings will help the Community Health Nurses to create awareness to the higher secondary school students towards the hazards of plastic usage.
- Nurses have great responsibilities to improve Knowledge and attitude towards the hazards of plastic usage among higher secondary school students
- The community health Nurses can Plan, Implement and evaluate various teaching programmes regarding the hazards of plastic usage among higher secondary school students
- The video assisted teaching programme could act as a guideline for the nursing personnel to give health education to higher secondary school students.
- The Nurse can co –ordinates with other health team members and conduct awareness programme to higher secondary school students in community.

Nursing education

- This study will be an eye opener for future Nursing students to pay attention in collection materials for health education of higher secondary school students community.
- It helps to educate the undergraduate students with facts on the hazards of plastic usage among selected higher secondary school students.

- The student Nurse may be educated to teach the community with the different aspects of knowledge regarding hazards of plastic usage among selected higher secondary school students.

Nursing administration

- This study will encourage the community health Nurse administrator to arrange for conference and seminars related to hazards of plastic usage among selected higher secondary school students.
- Pamphlets, handouts and booklets should be kept in the municipality, Pollution control board regarding hazards of plastic usage.
- Nursing administration should provide more number of community health Nurses in order to access and educate the community to have healthy children in our country.
- Arrange mass awareness programme in the community.

Nursing research

- The study motivates the other investigator to conduct further studies regarding hazards of plastic usage among selected higher secondary school students.
- This study will bring about the fact that more studies have to be done in the higher secondary school students.
- This study can be a baseline for the future studies to build upon.
- Extensive research can be conducted to create awareness to the community regarding hazards of plastic usage among selected higher secondary school students.

RECOMMENDATIONS

- A similar study can be conducted for long duration.
- The similar study can be conducted on a large sample to generalize the study Findings.
- A similar study can be undertaken to find out the role of Nurses in hazards of plastic usage among selected higher secondary school students.
- A similar study which includes practice can be undertaken.
- Similar study can be conducted as an awareness programme
- A same study be conducted among different population in community in settings.
- A same study can be conducted using different methods of teaching (peer mediated teaching)
- Same study can be replicated using different A.V Aids.

SUMMARY

This chapter dealt with the findings of the study related to demographic characteristics and knowledge and attitude of higher secondary school studentsregarding hazards of plastic usage. This chapter includes major implication of the study in nursing area as nursing practice, nursing administration, nursing education and nursing research.

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APPENDIX-A

Letter-1

Letter Seeking Permission to conduct the Study

SAKTHI COLLEGE OF NURSING

(Approved by Govt. of Tamilnadu, Recognised by INC, TNC & Affiliated to Dr. M.G.R. Medical University)

Sakthi Nagar, Dindigul - Palani Main Road,
Palakkanuthu - Po, Oddanchatram - 624 619.
Dindigul - Dt, Tamilnadu.

Phone : 0451 - 2050272
Hotline : 97509 56810
Fax : 0451 - 2554317
email : sakthinursingcollege@gmail.com

Dr. K.Vembanan, M.B.B.S., M.S.,
Chairman

PERMISSION LETTER

From

The Principal,
Sakthi College of Nursing,
Oddanchatram, Dindigul (Dt)

To

THE HEAD MASTER
GOVT. HIGHER SECONDARY SCHOOL
PALANI ROAD, DINDIGUL.

Respected Sir / ~~Madam,~~

Sub.: Request for permission to conduct research study – reg.

Mrs. KALAIARASI .S is a bonafide M.Sc., Nursing student studying of our college. As a partial fulfillment of The Tamilnadu Dr. MGR Medical University requirement for the award of the M.Sc., Nursing Degree, she is undertaking (A research study on **"HAZARDS OF PLASTIC USAGE AMONG HIGHER SECONDARY SCHOOL STUDENTS")**, she has identified your schools as the best place to conduct the study.

Further details of the proposed project will be furnished by the student personally. She will not hinder your routine in any way and she will abide to the rules and regulations of the institution. All the information collected from institution will be kept confidential.

I kindly request you to grant her permission to conduct the study at your esteemed institution.

Thanking you,

Yours sincerely,

Date : Permitted 22.7.13

Place :

HEAD MASTER
Govt. Higher Secondary School
PALANI ROAD
DINDIGUL - 624 001.

Principal
Sakthi College of Nursing
Sakthi Nagar, Palakkanuthu
Dindigul - (Dist)
624 624

Letter-2

SAKTHI COLLEGE OF NURSING

(Approved by Govt. of Tamilnadu, Recognised by INC, TNC & Affiliated to Dr. M.G.R. Medical University)

Sakthi Nagar, Dindigul - Palani Main Road,
Palakkanuthu - Po, Oddanchatram - 624 619.
Dindigul - Dt, Tamilnadu.

Phone : 0451 - 2050272
Hotline : 97509 56810
Fax : 0451 - 2554317
email : sakthinursingcollege@gmail.com

Dr. K.Vembanan, M.B.B.S., M.S.,
Chairman

PERMISSION LETTER

From

The Principal,
Sakthi College of Nursing,
Oddanchatram, Dindigul (Dt)

To

THE HEADMASTER
Govt. HIGHER SECONDARY SCHOOL
K. PUDHUKOTTAI, DINDIGUL.

Respected Sir / ~~Madam~~,

Sub.: Request for permission to conduct research study – reg.

Mrs. KALAIARASI .S is a bonafide M.Sc., Nursing student studying of our college. As a partial fulfillment of The Tamilnadu Dr. MGR Medical University requirement for the award of the M.Sc., Nursing Degree, she is undertaking (A research study on **"HAZARDS OF PLASTIC USAGE AMONG HIGHER SECONDARY SCHOOL STUDENTS")**, she has identified your schools as the best place to conduct the study.

Further details of the proposed project will be furnished by the student personally. She will not hinder your routine in any way and she will abide to the rules and regulations of the institution. All the information collected from institution will be kept confidential.

I kindly request you to grant her permission to conduct the study at your esteemed institution.

Thanking you,

Yours sincerely,

Date : Permitted

Place : 24.7.13.

Principal
Sakthi College of Nursing
Sakthi Nagar, Palakkanuthu
Dindigul - (Dist)
624 624
Principal

APPENDIX-B_1

LETTER SEEKING PERMISSION FOR CONTENT VALIDITY

From

S.Kalaiarasi
M.Sc, Nursing, II year
Sakthi College Of Nursing, Oddanchatram

To

Respected Sir/ Madam,

Sub : Requisition for expert opinion and content validity regarding

I **S.KALAIARASI**, am a II year M.Sc (N) Student of Sakthi College of Nursing, Oddanchatram, Dindigul under the Tamilnadu Dr. MGR Medical University .

As a Partial fulfillment of M.Sc Nursing degree program, I am conducting a research study on **"An experimental study to evaluate the effectiveness of video assisted teaching programme on knowledge and attitude towards the hazards of plastic usage among higher secondary school students at selected schools in Dindigul"** for the study, I have developed a questionnaire to assess the knowledge and a checklist to assess the attitude of higher secondary school students regarding hazards of Plastic usage practices.

I am sending the research tool for content validity and request you to give your expert and valuable review and opinion. I will be very thankful if your return at the earliest. Here with I have enclosed the necessary documents.

Thanking you

Yours sincerely

Enclosures

1. Statement of the problem & objectives of the study
2. Tool with blue Print & scoring key
3. Brief note on the research methodology and intervention tool
4. Certificated of content validity

APPENDIX-B_2

CERTIFICATE OF CONTENT VALIDITY

TO WHOME SO EVER IT MAY CONCERN

This is to Certify that the tool prepared by **S.KALAIARASI**, II Year M.Sc(N) Student of Sakthi College of Nursing for the conduction of the **"A study to evaluate the effectiveness of video assisted teaching programme on knowledge and attitude towards the hazards of plastic usage among higher secondary school students at selected schools in Dindigul"** is valid. She can proceed in conducting the data collection with it.

Signature

Place :

Date :

APPENDIX -C

LIST OF EXPERTS

1. **Dr. Navaneetha, Ph.D.,**
   Principal and professor in Nursing
   Pondicherry Institute of Medical Science,
   Pondicherry -14

2. **Mrs.Juliet Sylvia, M.Sc. (N)., Ph.D.,**
   Professor in Nursing,
   Sacred Heart Nursing College,
   Madurai -625020

3. **Mr.John Sam Arul Prabu, M.Sc.(N)., Ph.D.,**
   Professor in Nursing,
   C.S.I Jeyaraj Annapackiam College of Nursing
   Madurai - 625004

4. **Mrs. A.Muthu Lakshmi, M.Sc.(N).,**
   Principal & Professor in Nursing,
   Annai Dora College of Nursing
   AndiPatti, Theni- 625562

5. **Mrs. Sheeba, M.Sc.(N).,**
   Professor in Nursing,
   Christian College of Nursing
   Ambilikkai, Dindigul.

6. **Mr.Mani,**
   Lecturer in Biostatistics,
   Aravid Eye Hospital,
   Madurai.

7. **Dr.Sivanesan, M.D., D.P.H.,**
   Municipal Health Officer,
   Dindigul Municipality,
   Dindigul.

APPENDIX-D

RESEARCH CONCENT FORM

Dear Participant Students,

I am a M.Sc ., Nursing Student of Sakthi Nursing College, Oddanchatram. As a part of my Study, a research on Effectiveness of Video assisted teaching programme on knowledge and attitude towards the hazards the plastic usage among Higher Secondary School student's is selected to be conducted. The findings of the study will be helpful in increasing knowledge and attitude regarding Video assisted teaching programme.

I hereby seek your consent and co-operation to participate in the study. Please be frank and honest in your responses. The information collected will be kept confidential and anonymity will be maintained.

Thanking You,

Signature of the researcher

I ……. Hereby consent to participate and undergo the study

Place:

Date:

Signature of the participant

APPENDIX- E

ஆய்வில் பங்கு கொள்ள ஒப்புதல் படிவம்

அன்பார்ந்த மாணவ/மாணவிகளே .,

திருமதி.செ.கலைஅரசி ஆகிய நான் சக்தி செவிலியர் கல்லூரியில் செவிலியர் பயிற்சியில் முதுகலை பட்டம் பெறுவதற்கு பயிற்சியின் ஒரு பகுதியாக பிளாஸ்டிக்கை பயன்படுத்துவதால் ஏற்படும் விளைவுகளை பற்றி ஒரு குறும்படம் மூலம் பொது அறிவுத்திறன் மற்றும் மனப்பான்மை அறிவதற்காக ஆய்வுசெய்கிறேன்.

ஆகவே நீங்கள் இந்த ஆய்வில் பங்கு கொண்டு ஒத்துழைப்பு தருமாறு கேட்டுக்கொள்கிறேன். நீங்கள் கொடுக்கும் அனைத்து தகவல்களும் ஆய்வுக்காக மட்டும் பயன்படுத்தப்படும் . உங்களுடைய தகவல்கள் மற்றவர்களுக்கு தெரிவிக்கப்படாது என்று உறுதி கூறுகிறேன் .

நான் இந்த ஆய்வில் பங்குகொள்ள விரும்புகிறேன் .

ஆராய்சியாளரின் கையொப்பம் :

பங்குபெறுவோரின் கையொப்பம் :

APPENDIX- F

CERTIFICATE FOR ENGLISH EDITING
TO WHOME SO EVER IT MAY CONCERN

This is to certify that the dissertation titled "Effectiveness of video assisted teaching Programme on knowledge and attitude towards the hazards of plastic usage among selected higher secondary school students in Dindigul "by S.KALAIARASI., II Year M.Sc. (N) Sakthi College of Nursing was edited for English Language appropriateness by Assistant Professor. Pradeepa, M.A., M.Ed., M.Phil., Department of English, Sakthi Arts and Science College, Oddanchatram.,

Signature

APPENDIX- G

CERTIFICATE FOR TAMIL EDITING

TO WHOME SO EVER IT MAY CONCERN

This is certify that the tools demographic variables, Structured knowledge questionnaire , Rating Scale " to evaluate the Effectiveness of video assisted teaching Programme on knowledge and attitude towards the hazards of plastic usage among selected higher secondary School students by S.KALAIARASI., II Year M.Sc.(N) Sakthi College of Nursing for her dissertation titled "**Effectiveness of video assisted teaching Programme on knowledge and attitude towards the hazards of plastic usage among selected higher secondary School students"** was edited for Tamil Language appropriateness by Mrs.Dhanalakshmi, M.A., M.Ed., M.Phil., Ph.D., Tamil Department at Sakthi Arts and Science College, Oddanchatram.

Signature

APPENDIX- H_1

PART – I

DEMOGRAPHIC VARIABLE PROFORMA

Purpose

This proforma is used to measure the Demographic variables includes age, Sex ,Father's education, Mother's education, Father's occupation, Mother's occupation, Area of residence, family income and Source of information.

Instruction

Read the following carefully and put the (✓) tick mark for the appropriate option.

1. Sample No. ( )
2. Age in years
   - a) 15 Years ( )
   - b) 16 Years ( )
3. Sex
   - a)Male ( )
   - b) Female ( )

4.Father's education
   - a) No Formal Education ( )
   - b) High School ( )
   - c) Higher Secondary ( )
   - d) Graduate& Post Graduate ( )
   - e) Above ( )

5.Mother's education
   - a) No formal education ( )
   - b)High school ( )
   - c) Higher Secondary ( )
   - d) Graduate& Post Graduate ( )
   - e) Above ( )

6.Father's Occupation

a) Unemployed ( )

b) Govt. employee ( )

c) Private employee ( )

d) Business ( )

e) Coolie ( )

7.Mother's Occupation

a) Unemployed ( )

b) Govt. employee ( )

c) Private employee ( )

d) Business ( )

e) Coolie ( )

8. Area of residence

a) Urban ( )

b) Rural ( )

9. Family income

a) Rs.3000 -Rs.5000 ( )

b) Rs.5001 – Rs.8000 ( )

c) Rs. 8001 – Rs. 10000 ( )

d) Above Rs. 10000 ( )

10. Source of information

a) Television ( )

b) Radio ( )

c) News Paper ( )

d) Health personnel ( )

e) Others ( )

APPENDIX- H_2

PART –II

KNOWLEDGE QUESTIONNAIRE ON HAZARDS OF PLASTIC USAGE

Purpose:

This proforma is used to measure the information related to hazards of plastic usage

Instruction:

Please read the question and answer carefully choose the right answer and put the **(✓)** mark against the right answer.

1. What is mean by Plastic ?

A) Synthetic and light weight material ( )

B) Clay material ( )

C) Wood material ( )

D) Don't know ( )

2. Which is the basic component of common Plastic ?

A) Polyvinyl chloride ( )

B) Polymer ( )

C) Sodium chloride ( )

D) Don't know ( )

3. Which is the major type of plastic ?

A) Thermoset and thermoplastic ( )

B) Polyvinyl chloride ( )

C) Polypropylene ( )

D) Don't know ( )

4. Which code No of plastic is safer plastic for human being?

A) Code-1 ( )

B) Code-4 ( )

C) Code-3 ( )

D) Don’t know ( )

5. Which type of plastic is more safer for human life?

A) Low and high density polyethylene ( )

B) Polystyrene ( )

C) Polyethylene terephthalate ( )

D) Don’t know ( )

6. How much thickness of plastic bag measurements is more dangerous ?

A) Above 20 micron ( )

B) Average 20 micron ( )

C) Below 20 micron ( )

D) Don’t know ( )

7. What type of plastic is most dangerous to health?

A) Polypropylene ( )

B) High density polyethylene ( )

C) Polycarbonate ( )

D) Don’t know ( )

8. Which of the following product is made up of safer plastic?

A) Shampoo bottle ( )

B) Water bottle ( )

C) Disposable cups ( )

D) Don’t know ( )

9. Which parts of the human body is mostly affected by plastic ?

A) Lungs, brain and kidney ( )

B) Heart and pancreas ( )

C) Ear and nose ( )

D) Don’t know ( )

10. How does the plastic chemicals enter into the human body?

A) Direct transmission ( )

B) Direct touch ( )

C) Inhalation and ingestion ( )

D) Don’t know ( )

11. What are the ill effects of polyvinyl chloride plastics on human health ?

A) Blindness and deafness ( )

B) Asthma and cancer ( )

C) Obesity and diabetes ( )

D) Don’t know ( )

12. How does the plastic toxicity affect the growth of children ?

A) Developmental problems ( )

B) Agromegally ( )

C) Pitutory tumor ( )

D) Don’t know ( )

13. What is the ill effect of poly carbonate plastic use ?

A) Decreased sperm production in male ( )

B) Diabetes ( )

C) Nervous system effects ( )

D) Don’t know ( )

14 .Which following gas produced by burning plastic ?

A) Nitrogen ( )

B) Formalin ( )

C) Dioxin ( )

D) Don’t know ( )

15 .What is the ill effect of burning plastic on human body ?

A) Skin allergy ( )

B) Allergic asthma ( )

C) Heart disease ( )

D) Don’t know ( )

16. What happens to the soil if plastic waste is improperly disposed ?

A) Earthworm infertility in soil ( )

B) Fish does not lay eggs ( )

C) Air and water pollution ( )

D) Don’t know ( )

17. Which container would be more suitable for long preservation of food items ?

A) Aluminium container ( )

B) Plastic container ( )

C) Clay container ( )

D) Don’t know ( )

18. Which is the safest container that can be used for the food items stored in the refrigerator?

A) Steel ( )

B) Plastic ( )

C) Glass bottle ( )

D) Don’t know ( )

19. How will you minimize the contact of plastic with food items ?

A) Wrap the food items with thin plastic ( )

B) Wrap the food items with leaf or paper ( )

C) Wrap the food items with cloth ( )

D) Don’t know ( )

20. Which is safe utensil for infant feeding ?

A) Plastic utensil ( )

B) Steel utensil ( )

C) Aluminum utensil ( )

D) Don’t know ( )

21. What precaution will you take to purchase plastic toys ?

A) Toys with safety instructions ( )

B) Toys with non harmful indicators ( )

C) Toys without any instructions ( )

D) Don’t know ( )

22. How will you dispose the plastic wastes ?

A) Dump all the waste in the public waste bin ( )

B) Burn the waste near the surrounding area ( )

C) Segregate the plastic and send for recycling ( )

D) Don’t know ( )

23. How will you reduce the plastic hazards?

A) Use steel plates or leaf to eat food ( )

B) Use plastic plate to eat food ( )

C) Keep milk and water in the plastic bottles ( )

D) Don’t know ( )

24. What are the preventive measures of plastic hazards?

A) Don’t carry any food items in the plastic bag ( )

B) Use plastic disposable cup ( )

C) Throw plastic on the roadside ( )

D) Don’t know ( )

25. How can each person contribute to the prevention of plastic hazards?

A) Use and throw plastic ( )

B) Say ‘No’ to plastic use ( )

C) Treat the toxic diseases ( )

D) Don’t know ( )

ANSWER KEY

KNOWLEDGE QUESTIONNAIRE ON HAZARDS OF PLASTIC USAGE

1	a	11	b	21	a
2	b	12	a	22	c
3	a	13	a	23	a
4	b	14	c	24	a
5	a	15	b	25	b
6	c	16	a		
7	a	17	c		
8	a	18	a		
9	a	19	b		
10	c	20	b		

APPENDIX- H_3

PART –III

RATING SCALE FOR ASSESSING ATTITUDE ON HAZARDS OF PLASTIC USAGE

Purpose

This scale is used to measure the attitude of higher secondary school students

Instruction

Five columns are given for response. Kindly place a tick **(✓)** mark in the appropriate response.

S.no	Content	Strongly agree	Agree	Un certain	Dis agree	Strongly agree
1	Plastic material usage is good for our life					
2	Using Plastic material is very comfortable					
3	Now a days plastic material usage is very high					
4	Using of Plastic material cause health hazards					
5	Using low density type of plastic is safer for human life					
6	Finding plastic material code No is important					
7	Plastic bottles feeding are more common among babies					
8	Using of Plastic water bottles and plastic box are more common among students					

9	Plastic Material affect the liver and Brain					
10	Plastic toxicity affect the child growth					
11	Plastic material waste disposed improperly					
12	Plastic usage is harmful for environment					
13	Clean cloth bag is best than plastic bag					
14	Plastic container is best for storing food in refrigerator					
15	Segregate the plastic and send for recycling is good for our environment					

ANSWER KEY

RATING SCALE FOR ASSESSING ATTITUDE ON HAZARDS OF PLASTIC USAGE

S.no	Content	Strongly agree	Agree	Un certain	Dis agree	Strongly agree
1	Plastic material usage is good for our life	1	2	3	4	5
2	Using Plastic material is very comfortable	5	4	3	2	1
3	Now a days plastic material usage is very high	5	4	3	2	1
4	Using of Plastic material cause health hazards	5	4	3	2	1
5	Using low density type of plastic is safer for human life	5	4	3	2	1
6	Finding plastic material code No is important	5	4	3	2	1
7	Plastic bottles feeding are more common among babies	5	4	3	2	1
8	Using of Plastic water bottles and plastic box are more common among students	5	4	3	2	1
9	Plastic Material affect the liver and Brain	5	4	3	2	1
10	Plastic toxicity affect the child growth	5	4	3	2	1
11	Plastic material waste disposed improperly	5	4	3	2	1
12	Plastic usage is harmful for environment	5	4	3	2	1
13	Clean cloth bag is best than plastic bag	5	4	3	2	1
14	Plastic container is best for storing food in refrigerator	1	2	3	4	5
15	Segregate the plastic and send for recycling is good for our environment	5	4	3	2	1

APPENDIX- I_1

பகுதி - I

சுய சமூக குறிப்பு

நோக்கம் :

இந்த படிவத்தின் நோக்கம் வயது,பாலினம்,அப்பாவின் கல்வித்தகுதி, அம்மாவின் கல்வித்தகுதி, அப்பாவின் தொழில், குடியிருப்பு, குடும்ப வருமானம், ஆகியவற்றைப்பற்றி அறிய உதவுவதாகும்.

குறிப்பு : சரியான விடைக்கு (✓) குறியிடவும்

1) மாதிரி எண் : ( )

2) வயது (வருடங்களில்)

அ) 15 ( )

ஆ) 16 ( )

3) பாலினம்

அ) ஆண் ( )

ஆ) பெண் ( )

4) அப்பாவின் கல்வித்தகுதி

அ)படிக்காதவர் ( )

ஆ) உயர்நிலைப்பள்ளி ( )

இ)மேல்நிலைப்பள்ளி ( )

ஈ)பட்டப்படிப்பு ( )

உ)பட்டப்படிப்பிற்கும் மேல் ( )

5) அம்மாவின் கல்வித்தகுதி

அ)படிக்காதவர் ( )

ஆ) உயர்நிலைப்பள்ளி ( )

இ)மேல்நிலைப்பள்ளி ( )

ஈ) பட்டப்படிப்பு ( )

உ)பட்டப்படிப்பிற்கும்மேல் ( )

6) அப்பாவின் தொழில்

அ) வேலையில்லாதவர் ( )

ஆ)அரசு ஊழியர் ( )

இ) தனியார் ஊழியர் ( )

ஈ) வியாபாரம் ( )

உ) கூலி ( )

7) அம்மாவின் தொழில்

அ) வேலையில்லாதவர் ( )

ஆ)அரசு ஊழியர் ( )

இ) தனியார் ஊழியர் ( )

ஈ) வியாபாரம் ( )

உ) கூலி ( )

8) குடியிருப்பு

அ) நகரம் ( )

ஆ) கிராமம் ( )

9.குடும்ப வருமானம்

ஆ) ரூ.3001 - ரூ.5000 வரை ( )

ஆ) ரூ.5001 - ரூ.7000 வரை ( )

இ)ரூ.7000 - ரூ.10000 வரை ( )

ஈ) ரூ.10000 க்கு மேல் ( )

10. செய்தி கிடைக்குமிடம்

அ) தொலைக்காட்சி ( )

ஆ) ரேடியோ (வானொலி) ( )

இ) செய்தித்தாள் ( )

ஈ)இதரம் (குறிப்பிடவும்) ( )

APPENDIX- I_2

பகுதி - II

பிளாஸ்டிக்கை பயன்படுத்துவதால் ஏற்படும் விளைவுகள் மற்றும் அது சார்ந்த படிவம்

குறிப்பு : ஒன்றன் பின் ஒன்றாக கேள்விகளை வாசித்துப் பதிலை **(✓)** குறியிடவும் .

1. பிளாஸ்டிக் என்றால் என்ன ?

அ) செயற்கையாக உண்டாக்கப்பட்ட மற்றும் கனமில்லாத பொருள் ( )

ஆ) களிமண்ணால் ஆன பொருள் ( )

இ) மரத்திலான பொருள் ( )

ஈ) தெரியவில்லை ( )

2. பிளாஸ்டிக்கில் அடங்கியுள்ள உட்பொருட்கள் என்ன ?

அ) பாலிவினைல் குளோரைடு ( )

ஆ) பாலிமர் ( )

இ) சோடியம் குளோரைடு ( )

ஈ) தெரியவில்லை ( )

3. பிளாஸ்டிக்கின் முக்கிய வகைகள் என்ன ?

அ) தெர்மோசெட் மற்றும் தெர்மோ பிளாஸ்டிக் ( )

ஆ) பாலிவினைல் குளோரைடு ( )

இ) பாலிபுரப்பைலீன் ( )

ஈ) தெரியவில்லை ( )

4. மனிதனுக்குப் பாதுகாப்பான பிளாஸ்டிக்கின் பிரிவு எண் என்ன ?

அ) எண்-1 ( )

ஆ) எண் - 4 ( )

இ) எண்-3 ( )

ஈ) தெரியவில்லை ( )

5) மனிதனுக்கு எந்தவகை பிளாஸ்டிக் மிகவும் பாதுகாப்பானது ?

அ) குறைவான மற்றும் உயர்ந்த அடர்த்தியான பாலி எத்திலின் ( )

ஆ) பாலிஸ்டிரின் ( )

இ) பாலி எத்திலின் டிடரிப்தலேட் ( )

ஈ) தெரியவில்லை ( )

6) தீங்கு விளைவிக்கக்கூடிய பிளாஸ்டிக்கின் அடர்த்தி என்ன ?

அ) 20 மைக்ரானுக்க மேல் ( )

ஆ) சராசரியாக 20 மைக்ரான் ( )

இ) 20 மைக்ரானுக்கு கீழ் ( )

ஈ) தெரியவில்லை ( )

7. மனிதனின் ஆரொக்கியத்தை மிகவும் பாதிக்கக்கூடிய பிளாஸ்டிக்கின் வகை என்ன ?

அ) பாலிகார்பனேட் ( )

ஆ) உயர் அழுத்த பாலி எத்தலின் ( )

இ) பாலி புரப்பைலீன் ( )

ஈ) தெரியவில்லை ( )

8. கீழ்க்கண்டவற்றுள் எந்தப் பொருள் பாதுகாப்பான பிளாஸ்டிக்கால் தயாரிக்கப்பட்டது ?

அ) தண்ணீர்பாட்டில் ( )

ஆ) சாம்பு பாட்டில் ( )

இ) டிஸ்போசபல் கப் ( )

ஈ) தெரியவில்லை ( )

9. பிளாஸ்டிக்கின் பயன்பாட்டினால் மனித உடலில் அதிகமாக பாதிக்கப்படும் உறுப்புகள் எவை ?

அ) நுரையீரல், மூளை மற்றும் சிறுநீரகம் ( )

ஆ) இதயம் மற்றும் கணையம் ( )

இ) காது மற்றும் மூக்கு ( )

ஈ) தெரியவில்லை ( )

10. எந்த வழியாக பிளாஸ்டிக்கின் நச்சு மனித உடலுக்குள் செல்கிறது ?

அ) நேரடியாகத் தொற்றுவதால் ( )

ஆ) நேரடியாகத் தொடுவதால் ( )

இ) சுவாசித்தல் மற்றும் உண்பதால் ( )

ஈ) தெரியவில்லை ( )

11. பாலிவினைல் குளோரைடு பிளாஸ்டிக்கினால் மனிதனுக்கு ஏற்படும் விளைவுகள் என்ன ?

அ) கண்பார்வையில்லாமை மற்றும் காதுகேளாமை ( )

ஆ)ஆஸ்துமா மற்றும் புற்றுநோய் ( )

இ) உடல் பருமன் மற்றும் சர்க்கரை நோய் ( )

ஈ) தெரியவில்லை ( )

12.பிளாஸ்டிக் நச்சுக்கள் குழந்தையின் வளர்ச்சியை எந்த வகையில் பாதிப்பை உண்டாக்குகிறது ?

அ) வளர்ச்சி குறைபாடு ( )

ஆ) அக்ரோமெகாலி ( )

இ) பிட்யூட்டரில் கட்டி ( )

ஈ) தெரியவில்லை ( )

13. பாலி கார்பனேட் பிளாஸ்டிக்கை உபயோகப்படுத்துவதால் ஏற்படும் விளைவுகள் என்ன ?

அ) ஆணுக்கு விந்து உற்பத்தியில் குறைபாடு ( )

ஆ) சர்க்கரைநோய் ( )

இ) நரம்பு மண்டல பாதிப்புகள் ( )

ஈ) தெரியவில்லை ( )

14. கீழ்க்கண்டவற்றுள் பிளாஸ்டிக் பொருள்களை எரிப்பதால் வெளிவரும் வாயு என்ன ?

அ)நைட்ரஜன் ( )

ஆ) டையாக்சின் ( )

இ)பார்மலின் ( )

ஈ) தெரியவில்லை ( )

15.பிளாஸ்டிக்கை எரிப்பதால் மனிதனுடைய உடல்நல்திற்கு வரும் பாதிப்புகள் என்ன ?

அ) தோல் அலர்ஜி ( )

ஆ)ஆஸ்துமா அலர்ஜி ( )

இ)இதயநோய் ( )

ஈ) தெரியவில்லை ( )

16. தேவையற்ற பிளாஸ்டிக் கழிவுகளை நிலத்தில் போடுவதால் மண்ணின் தன்மை எவ்வாறு பாதிக்கிறது ?

அ) மண்ணில் மண்புழு இனப்பெருக்க பாதிப்பு ( )

ஆ) மீன் முட்டையிடுவதில்லை ( )

இ) காற்று மற்றும் தண்ணீர் மாறுபடுதல் ( )

ஈ) தெரியவில்லை ( )

17. உணவுப் பொருள்களை நீண்டநாள் பாதுகாப்பதற்கு மிகவும் சிறந்த சாதனம் என்ன ?

அ) அலுமினிய பாத்திரம் ( )

ஆ) பிளாஸ்டிக் பாத்திரம் ( )

இ) களிமண்ணால் ஆன பாத்திரம் ( )

ஈ) தெரியவில்லை ( )

18. குளிர்சாதப்பெட்டியில் உணவுப் பொருள்களை பாதுகாக்ப ஏற்ற பாத்திரம் என்ன?

அ) சில்வர் ( )

ஆ) பிளாஸ்டிக் ( )

இ) கண்ணாடி பாட்டில் ( )

ஈ) தெரியவில்லை ( )

19. உணவுப்பொருள்களை பாதுகாப்பதற்கு பிளாஸ்டிக்கின் உபயோகத்தை எவ்வாறு குறைக்கலாம் ?

அ) உணவுப் பொருள்களை மெல்லிய பிளாஸ்டிக்

பையினால் சுற்றி வைப்பது . ( )

ஆ) உணவுப் பொருள்களை இலை மற்றும் பேப்பரினால்

சுற்றி வைப்பது. ( )

இ) உணவுப் பொருளை துணியினால் சுற்றி வைப்புத ( )

ஈ) தெரியவில்லை ( )

20. குழந்தைக்கு உணவூட்டுவதற்கு பாதுகாப்பான் பாத்திரம் எது ?

அ) பிளாஸ்டிக் பாத்திரம் ( )

ஆ) சில்வர் பாத்திரம் ( )

இ) அலுமினிய பாத்திரம் ( )

ஈ) தெரியவில்லை ( )

21. பிளாஸ்டிக் பொம்மைகளை வாங்கும்போது எந்த வகையான தடுப்பு முறைகளை கையாளலாம்.

அ) பொம்மையுடன் பாதுகாப்பு அறிவிப்புகள் உள்ளவை ( )

ஆ) பொம்மையுடன் பாதுகாப்பு விளைவுகள் இல்லாமல் இருப்பது ( )

இ) பொம்மையில் அறிவிப்புகள் இல்லாதது ( )

ஈ) தெரியவில்லை ( )

22. நீங்கள் பிளாஸ்டிக் பொருள்களின் கழிவுகளை எவ்வாறு வெளியேற்றுவீர்கள் ?

அ) பிளாஸ்டிக் கழிவுகளை குப்பைத்தொட்டியில் போடுவது ( )

ஆ) குடியிருப்பு பகுதிகளில் பிளாஜ்டிக்கை எரிப்பது ( )

இ) பிளாஸ்டிக்கை சேகரிப்பது சுத்திகரிப்புக்கு அனுப்புவது ( )

ஈ) தெரியவில்லை ( )

23. நீங்கள் பிளாஸ்டிக்கினால் உண்டாகும் விளைவுகளை எவ்வாறு குறைப்பீர்கள் .

அ) சில்வர் தட்டுகள் அல்லது இலையில் உணவு உண்பது ( )

ஆ)பிளாஸ்டிக் தட்டுகளில் உணவு உண்பது ( )

இ) பால் மற்றும் தண்ணீரை பிளாஸ்டிக் பாட்டில்களில் வைப்பது ( )

ஈ) தெரியவில்லை ( )

24. பிளாஸ்டிக்கின் விளைவுகளைத் தடுக்கும் முறைகள் யாவை ?

அ) பிளாஸ்டிக் பைகளில் உணவு எடுத்து செல்லக்கூடாது ( )

ஆ) பயன்படுத்திய பின் பிளாஸ்டிக் கப்பை தூக்கி எறியலாம் ( )

இ)பிளாஸ்டிக்கை சாலையில் போடலாம் ( )

ஈ) தெரியவில்லை ( )

25. பிளாஸ்டிக்கின் விளைவுகளைத் தடுப்பதில் நாம் ஒவ்வொருவரின் பங்களிப்பு என்ன ?

அ) பிளாஸ்டிக்கைப் பயன்படுத்தியவுடன் தூக்கி எரியலாம் ( )

ஆ) பிளாஸ்டிக்கைப் பயன்படுத்த வேண்டாம் என்று சொல்லவும் ( )

இ) பிளாஸ்டிக்கினால் வரும் நோய்களை குணப்படுத்தவும்இ ( )

ஈ) தெரியவில்லை ( )

விடைகள்

பிளாஸ்டிக்கை பயன்படுத்துவதால் ஏற்படும் விளைவுகள் மற்றும் அது சார்ந்த படிவம்

1	அ	11	ஆ	21	அ
2	ஆ	12	அ	22	இ
3	அ	13	அ	23	அ
4	ஆ	14	இ	24	அ
5	அ	15	ஆ	25	ஆ
6	இ	16	அ		
7	அ	17	இ		
8	அ	18	அ		
9	அ	19	ஆ		
10	இ	20	ஆ		

APPENDIX- I_3

பகுதி - III

மாணவர்களின் மனப்பான்மையை அளக்கும் அளவுகோல்

நோக்கம் : இந்த அளவுகோலானது மாணவர்களின் மனப்பான்மையை அளக்க பயன்படுத்துகிறோம்

நிபந்தனைகள் : மாணவர்கள் உற்று கவனித்து அதற்கு பொருத்தமான ஒன்றை தோந்தெடுத்து அதற்கு நேராக (✓) சரி என்ற குறியை இடவும் .

வ. எண்	திட்ட பரிணாமம்	முழு மனதுடன் ஒத்துக்கொள்கிறேன்	ஒத்துக்கொள்கிறேன்	உறுதியாக தெரியாது	ஒத்துக்கொள்ளவில்லை	முழு மனதுடன் ஒத்துக்கொள்கிறேன்
1	நமது அன்றாட வாழ்க்கையில் பிளாஸ்டிக் பொருள்களின் பயன்பாடு மிகவும் நல்லது					
2	பிளாஸ்டிக் பொருள்களைப் பயன்படுத்துவது வசதியாக உள்ளது					
3	பிளாஸ்டிக் கொருள்களின் பாயன்பாடு இன்றைய வாழ்க்கை முறையில் அதிகரித்துள்ளது .					
4	பிளாஸ்டிக் பொருள்களின் பயன்பாடு உடல் நலத்திற்க்குக் கேடு விளைவிப்பவை					
5	குறைந்த அடர்த்தி தன்மை கொண்ட பிளாஸ்டிக் பொருட்களைப் பயன்படுத்துவது மனித வாழ்க்கைக்குப் பாதுகாப்பானது.					
6	பிளாஸ்டிக் பொருட்களில் பிரிவு எண்ணை கண்டுபிடிப்பது மிகவும் முக்கியம்					

7	குழந்தைகளுக்கு பாலூட்டுவதற்கு பிளாஸ்டிக்காலான பாட்டிலை அதிகம் பயன்படுத்துகிறார்கள்					
8	மாணவர்கள் பிளாஸ்டிக் தண்ணீர் பாட்டில் மற்றும் பிளாஸ்டிக் டப்பாக்களை அதிகம் பயன்படுத்துகிறார்கள்					
9	பிளாஸ்டிக் பொருட்களை பயன்படுத்துவதால் கல்லீரல் மற்றும் மூளை பாதிக்கும்					
10	பிளாஸ்டிக் பொருள்கனிலிருந்து வெளிவரும் நச்சுப் பொருட்கள் குழந்தைகளின் வளர்ச்சியைப் பாதிக்கும்					
11	பிளாஸ்டிக் பொருள்களின் கழிவுகளை முறையாக வெளியேற்றுவதில்லை					
12	பிளாஸ்டிக் பொருள்களின் பயன்பாடு சுற்றுச்சூழலில் கேடு விளைவிக்கிறது					
13	பிளாஸ்டிக் பையை விட சுத்தமான துணிப்பை சிறந்தது.					
14	குளிர்சாதப்பொட்டியில் பிளாஸ்டிக் பாத்திரத்தில் உணவுகளைச் சேகரித்து வைப்பது நல்லது					
15	பிளாஸ்டிக்கை சேகரித்து சுத்திகரிப்புக்கு அனுப்புவது சுற்றுச்சூழலுக்கு நல்லது					

விடைகள்

மாணவர்களின் மனப்பான்மையை அளக்கும் அளவுகோல்

வ. எண்	திட்ட பரிணாமம்	முழு மனதுடன் ஆமோதிக் கிறேன்	ஆமோதிக் கிறேன	உறுதியாக தெரியாது	ஆமோதிக்க வில்லை	முழு மனதுடன் ஆமோதிக்கிறேன்
1	நமது அன்றாட வாழ்க்கையில் பிளாஸ்டிக் பொருள்களின் பயன்பாடு மிகவும் நல்லது	1	2	3	4	5
2	பிளாஸ்டிக் பொருள்களைப் பயன்படுத்துவது வசதியாக	5	4	3	2	1
3	பிளாஸ்டிக் கொருள்களின் பாயன்பாடு இன்றைய வாழ்க்கை முறையில் அதிகரித்துள்ளது .	5	4	3	2	1
4	பிளாஸ்டிக் பொருள்களின் பயன்பாடு உடல் நலத்திற்க்குக் கேடு விளைவிப்பவை	5	4	3	2	1
5	குறைந்த அடர்த்தி தன்மை கொண்ட பிளாஸ்டிக் பொருட்களைப் பயன்படுத்துவது	5	4	3	2	1
6	பிளாஸ்டிக் பொருட்களில் பிரிவு எண்ணை கண்டுபிடிப்பது மிகவும் முக்கியம்	5	4	3	2	1
7	குழந்தைகளுக்கு பாலூட்டுவதற்கு பிளாஸ்டிக்காலான பாட்டிலை அதிகம் பயன்படுத்துகிறார்கள்	5	4	3	2	1
8	மாணவர்கள் பிளாஸ்டிக் தண்ணீர் பாட்டில் மற்றும் பிளாஸ்டிக் டப்பாக்களை அதிகம் பயன்படுத்துகிறார்கள்	5	4	3	2	1

9	பிளாஸ்டிக் பொருட்களை பயன்படுத்துவதால் கல்லீரல் மற்றும் மூளை பாதிக்கும்	5	4	3	2	1
10	பிளாஸ்டிக் பொருள்கனிலிருந்து வெளிவரும் நச்சுப் பொருட்கள் குழந்தைகளின் வளர்ச்சியைப் பாதிக்கும்	5	4	3	2	1
11	பிளாஸ்டிக் பொருள்களின் கழிவுகளை முறையாக வெளியேற்றுவதில்லை	5	4	3	2	1
12	பிளாஸ்டிக் பொருள்களின் பயன்பாடு சுற்றுச்சூழலில் கேடு விளைவிக்கிறது	5	4	3	2	1
13	பிளாஸ்டிக் பையை விட சுத்தமான துணிப்பை சிறந்தது.	5	4	3	2	1
14	குளிர்சாதப்பொட்டியில் பிளாஸ்டிக் பாத்திரத்தில் உணவுகளைச் சேகரித்து வைப்பது நல்லது	1	2	3	4	5
15	பிளாஸ்டிக்கை சேகரித்து சுத்திகரிப்புக்கு அனுப்புவது சுற்றுச்சூழலுக்கு நல்லது	5	4	3	2	1

APPENDIX-J_1

LESSON PLAN

VIDEO ASSISTED TEACHING PROGRAMME ON HAZARDS OF PLASTIC USAGE

INTRODUCTION

The advanced world has become more competent and scientifically proven with innovations. It has added to the comfort of human living. One such aid in the present busy life is the easy carriage plastic has become very popular by its thin texture and consistency. On the other hand its use has brought many other problems. It could be due to improper disposal or recycled plastic, Which imposes health and environmental problems. Just a few years ago we had milk, Oil and other liquids sold in glass bottles and clothes, bread, biscuits wrapped in paper However, these are being replaced by Plastic due to its light weight , small Space accommodation and due to the attitude of " Use and throw ''

World wide plastic production rose to 280 million tones in 2011, according to first rough estimates Published by Plastic Europe. This represents around 4% increase from 2010, when 270 million tones of plastics were produced .From 2010 to 2016, global Plastics Consumption is expected to grow by an average of about 4% each year.7 million tons in the world in 1960 to 196 million tons in 2005 and to continue reaching over 365 million tons in 2015, 540 million tons in 2020, Using a more Conservative annual rate of 6.5%.

QUESTION	CONTENT
What is mean by Plastic ?	**DEFINITON OF PLASTIC** A Plastic material is any of a wide range of synthetic or semi synthetic organic solids that are moldable. Plastics are typically Organic Polymers of high molecular mass, but they often contain other substances, They are usually synthetic most commonly delivered form Petrochemicals, but many are partially natural. A material consisting of very large molecules characterized by light weight high corrosion resistance, high strength-to weight ratios, and low melting points, most plastics are easily shaped or formed. Plastic is a group of different chemical Substances, which consist of a substance having a high molecular weight called polymers that changes from the thin consistency of plastic into solid at the final state. **COMPOSITION OF PLASTIC :** A plastic is made up principally of a binder together with plasticizers, fillers, pigments and other additives binders may be natural materials:- (eg) cellulose derivatives, casein, or milk protein , but are more commonly synthetic resins.

Enumerate the Composition of Plastics?	**Polymers :** The binder materials consist of very long chainlike molecules called polymers. **Plasticizers :** Plasticizers are added to a binder to increase flexibility and toughness **Fillers :** Fillers are added to improve particular properties, (eg) hardness or resistence to Shock. **Pigments:** It used to impart various colors. virtually any desired color or shape and many combinations of the properties of hardness, durability, elasticity and resistance to heat, cold and acid can be obtained in a Plastic. **TYPES OF PLASTIC :** Plastic can be divided into 2 major catetories : 1. THERMOSET OR THERMOSETTING PLASTICS : Once cooled and hardened, these plastics retain their shapes and cannot return to their original form. They are hard and durable .Thermosets can be used for auto parts, aircraft parts and tires. Examples : Poly urethanes, Polyesters, epoxy resins and phenolic resins .

Classify the types of Plastics?	2.THERMO PLASTICS : Less regid than thermosets, thermoplastics can soften upon heating and return to their original form they are easily molded and extruded into films, fibers and packaging. Ex : Polyethylene (PE), Propropylene (PP) , Polyvinyl choloride (PVC) **PLASTIC TYPES, CHARACTERISTICS AND DANGERS :** Individuals have a way to identify the type of plastic in many products, especially food storage containers and packaging. many but not all , such plastic products have a number the resin identification Code-molded formed or imprinted in or on the container, often or the bottom. This system of coding was developed in 1988 by the U.S based society of the Plastics industry to facilitate the recycling of post consumer Plastics. It is voluntary for plastic manufactures, but has become relatively standard on certain Plastic products sold globally. Knowing the code for a particular product consumers can then inform themselves of the characterestics of the plastic and the risks of using that product. The seven Plastic resin codes are each briefly described below to provide a quick snapshot detailing the name of the resin (i.e) the base material of the Plastic typical products it is found in dangerous chemicals it leaches, and why they are dangerous .

	1. Polyethylene terephthalate (PET OR PETE)  The Polyethylene terephthalate is used to prepare storage container for preserving Soft drink, juice, water, beer, mouthwash, peanut butter, salad dressing, detergent and cleaner containers . Hazards of this Polyethylene terephthalate Workers exposed to antimony trioxide for long periods of time have exhibited respiratory and ,Skin initaions , menstrual Problems, miscarriage ,Children exhibited slower development in the first twelve months of life . **2.High density polyethylene (HDPE)**  Used in Opaque milk, water juice containers, bleach, detergent and Shampoo bottles, garbage bags, yogurt and margaine tubs, cered box lines. Considered a **" Safer Plastic ".**

	3.Polyvinyl Chloride : (V or Vinyl or PVC)  Used in • toys, clear food and nonfood packaging • Some Squeeze Bottles • Shampoo bottles • cooking oil • peanut butter jars • Detergent, window cleaner bottles • Shower curtains • Numerous construction Products . (eg. Pipes, siding) Hazards of this Polyvinyl Chloride • endocrine disruptors (female hormone estrogen)

	• asthma • Allergic in children • Certain types of cancer • negative effects on the liver, kidney **4.Low density Polyethylene(LDPE)**  Used in dry cleaning,bread, frozen food bags, Squeezable bottles (honey, mustard) Considered a**'Safer Plastic ".** **5. Polypropylene (PP)**  Used in Yogunt and Margarine tubs, medicine and syrup bottles, strals other opaque plastic containers, including baby bottles. considered a **' Safer' Plastic**".

	6. Polystyrene (PS)  • Used in egg cartons, disposable cups and bowls, food containers, plastic cutlery, Compact disc cases. • Hazards of this are reproductive and developments problem, Long exposure by workers has shown brain and nervous system effects, adverse effects on red blood cells, liver, kidneys and stomach in animal studies. **7. Other**  This is a catch - all category that includes anything that does not come within the other Six categories. One must be careful in interpreting this category because it includes polycarbonate a dangerous plastic. Polycarbonate is used in many plastic babby bottles, clean plastic “sippy” cups, sports water bottles three and five gallon large water, Storage containers, metal food can liners, some juice and ketchup containers, compact discuses cell phones, computers .

	Hazards of this wastage chromosome damage in female Ovaries, decreased sperm Production in males, early onset of puberty, Various behavioural changes, altered immune function. **Two Other Types of Plastic :** Code 7 are acrylonitrile Styrene (AS) or Styrene a crylonitrile (SAN) and acrylonitrile but a diene Styrene. Used in mixing bowls , thermos casing, dishes, cuttery, coffee filters, toothe brushes, battery housing . **USES OF PLASTICS :** The relatively low density of most plastic materials means the end products are light weight. They also have excellent properties. They are also easy to mould into complex Shapes and forms, allowing integration of different materials and function. 1. Packaging : Plastics food packaging, for instance, does not affect the taste and quality of the food stuff, The barrier Properties of plastics ensure that food keeps its natural taste while protection it from external contamination . Benefits • The lightest packaging material • food conservation and Preservation

Explain the Uses of Plastic?	• Safe and hygienic 2. Building and Construction : In 2010, The building and Construction sector consumed 9.54 million tones of plastics, making it the Second larges plastic application after packaging insulation ,Piping ,window frames ,interior design. 3.Transporation : When developing transport solutions. designers need to find the right balance between high performance, competitive pricing, Style, reliability, Comfort, Safety, Strength, fuel efficiency and minimal environmental impact. • Air craft industry • Car 4.Electrical & Electronic : From simple cables and household appliances to smart phones and Blue ray Players, many of the latest devices created in the electrical and electronic sector capitalize on new generation plastics . • Resource efficiency (LCD) • Light Weight (Smart Phones, MP3 Players) • Resistance - electromagnetic radiation (power supply)

	• fire safety 5.Agriculture : Plastics in agriculture has helped farmers increase crop production, improve food quality and reduce the ecological foot print of their activity • Innovative and sustainable solution (Plastic irrigation pipes pesticides) • Green house • Tunnels • Silage (Store animals grains during winter) • Crop collecting contend 6.Medical health • disposable syringes • Intra venous blood bags • Heart valves • Catheters • Prosthesis

	• Artificial corneas (eye injuries) • Hearing aids • Plastic pill capsules. **ENTRY OF TOXIC PLASTIC CHEMICAL IN HUMAN BODY** Human beings are exposed to the plasticizers through the use of plastic articles. they consume the toxic chemicals in the following ways : 1. Ingestion 2. inhalation 3. Direct injection 4.Skin absorption **1. Plastic Chemical Consumption by ingestion**. Individuals ingest plastic chemicals through food, water and Sometimes through medical treatment that place vinyl products into mouth esophagus or stomach. examples : 1. Microwaving of food in the plastic containers causes (leaching out of plasticizers to people).

Explain the entry of toxic plastic chemical in human body ?	2.Food stored in the plastic containers 3. Water and oil stored in the Plastic bottles 4. Plastic tubes, syringes in the medical treatment. **2. Plastic Chemical Consumption by inhalation :** Human beings are exposed to plastic chemical inhalation to the lungs. Ex: • Those who are working in the plastic industry. • When people burn plastic waste, the poisonous gas will be inhalation by them and neighboring people. • Medical treatment using gas inhalation through Plastic pipes. **3. Plastic chemical Consumption through direct injection :** • Medicines Stored in the Plastic Syringes and bottles and injected to human body. • Blood and glucose Stored in the plastic containers and using plastic canulas and tubes to inject medicine **4.Plastic Chemical Consumption through skin absorption :** • Skin allergy due to continuous use of plastic foot wear, gloves, oathe it producesthe skin rashes, pustules

Describe the health hazards of burning plastics?	and crust formation. **HEALTH HAZARDS OF BURNING PLASTICS :** Burning of Plastics emits poisonous gas know as dioxin In human it causes ; • Skin diseases • lung diseases • Cancer of lung • liver • Stomach • kidney • heart • brain. In environment it depletes the ozone layer in the atmosphere, Which is essential in protection us form harmful radiation form the sunlight.

List down the hazards due to unhealthy disposal of plastic waste?

HAZARDS DUE TO UNHELTHY DISPOSAL OF PLASTIC WASTE :

1. Clogging of drains the drainage gets choked with the plastic waste and over flowing of the sewage and other waste.
2. Entangling of sea , river and land animals
3. non-biodegradebility (ie) Plastic cannot be attacked by micro organisms.
4. Fertility of the Soil is lost due to moving away of earth worms.
5. water does not locate into the earth
6. Fish does not lay eggs near plastic accumulated water.
7. Air and water pollution with plastic chemicals.

PREVENTION OF PLASTIC HAZARDS

DO'S	DONT'S
1.Always carry a cloth or jute bag when you are going when you are going for a purchase	Do not carry any food items in the Plastic carry bag
2.Use steel plates or leaf to eat food	Do not eat from plastic containers or plastic plates

Enlist the prevention of plastic hazards?	3.Use mud, clay or glass cups to drink water or other liquids	Don’t use plastic disposable cup or glasses to chink tea or water
	4.Use steel vessels to keep food stuffs in the refrigerator.	Do not keep anything in the Plastic container to freeze.
	5.Milk ,oil, water and other edible liquids should be kept in glass bottles steel or clay containers	Do not deep milk, oil, water and other liquids in the plastic bottles or plastic packets
	6.Use cloth or light weight wooden dolls for children	Do not use plastic toys and painted toys containing lead
	7.It at all you are completed to carry food items in the plastic bag wrap with leaf or paper and then place in the plastic, bag or container.	Do not throw plastic bags on the road side
	8.Segregate the Plastic wastes and send for recycling	Do not burn plastic wastes .
	9.Long term preservation of food with any acid Should be kept in clay or glass containers	Long preservation of food cannot be kept in the plastic containers especially with acid.

	10.Use copper coated metal pipes for water supply .	Plastic PVC pipes should be stopped for water supply .
	11.Provide alternatives and encourage sensible policies on plastic use and recycling	Do not encourage the production of disposable plastic articles
	12.Learn to phase out plastics	Do not use any plastic items in your daily life
	13.Say no to plastic with in one self	Do not encourage others to use plastic items
	14.Make your house, School and community away form non biodegradable plastics	Do not through the plastics wastes into the sea or river

CONCLUSION :

The plastic can be bad for us and bad for the environment. recent studies have shown that there’s more plastic than plankton in some of the remote parts of our oceans. And there are increasing reports on the human health effects of chemicals used in plastic products.

APPENDIX-J_2

பிளாஸ்டிக்கைப் பயன்படுத்துவதால் ஏற்படும் விளைவுகள் :

முன்னுரை :

இன்றைய நவீன உலகத்தில் அறிவியல் கண்டுபிடிப்புகள் இன்றியமையாததாக உள்ளன. இதில் மனித வாழ்க்கையில் எளிதாக பயன்படுத்துவதற்குப் பிளாஸ்டிக் தவிர்க்க முடியாதவையாக உள்ளது. இந்த பொருளை பயன்படுத்துவதற்கும் தூக்கி எறிவதற்கும் வசதியாக இருக்கின்றது. ஆனாலும் இந்தப் பிளாஸ்டிக்கைப் பயன்படுத்துவதில் உள்ள தீமைகளை யாரும் எண்ணிப்பார்ப்பது இல்லை, அதாவது சுற்றுப்புற சூழல் மற்ற உயிரினங்களுக்கு மிகப்பெரிய ஆபத்தை உண்டாக்குவது பற்றி யாரும் கவலைப்படுவது இல்லை . இதனை ஒரு சில வருடங்களுக்கு முன்பு பார்த்தோமானால் பால், எண்ணெய் மற்றும் வீட்டு சாமான்கள் வாங்குவதற்கு அலுமினியம் ,பாட்டில், பேப்பர்,துணி , மரத்திலான பொருட்களைப் பயன்படுத்தினோம்.

இப்பொருட்களால் எவ்வித சுற்றுப்புற சுகாதாரம் மாசுபடுவதில்லை என்பது அனைவருக்கம் தெரிந்ததே. 2011-ம் ஆண்டின் உலகப் புள்ளிவிபர ஆய்வின்படி 280 - மில்லியன் டன் பிளாஸ்டிக் (நெகிழி) உற்பத்தி செய்யப்படுகிறன. இது 2010-ம் ஆண்டின் அளவைவிட 4 சதவீதம் அதிகமாகும் . தொடர்ந்து இந்தப் புள்ளிவிபரம் ஒவ்வொரு ஆண்டும் 4 சதவீதம் அதிகரித்து வருகின்ற 2020 -ஆம் ஆண்டுக்குள் 540 மில்லியன் டன்னை எட்டும் என்று இந்த ஆய்வு சுட்டிக்காட்டுகிறது .

கேள்விகள்	பதில்கள்
பிளாஸ்டிக் என்றால் என்ன ?	**பிளாஸ்டிக் என்றால் என்ன ?** பிளாஸ்டிக் என்பது ஆர்கானிக் பாலிமர் என்ற வேதிப்பொருட்களால் செயற்கையாக உண்டாக்கப்பட்ட மணமில்லாத பொருளாகும் . மேலும் பிளாஸ்டிகில் உள்ள பிளாடிசைசர் என்னும் பொருளானது எளிதில் வளையக்கூடியதும் மற்றும் கடினத்தன்மை அதிகரிப்பதற்கும் உதவுகிறது .
பிளாஸ்டிக்கின் வகைகள் யாவை ?	**பிளாஸ்டிக்கின் வகைகள் :** பிளாஸ்டிக்கை இரண்டு வகைகளாகப் பிரிக்கலாம் . அ) தெர்மோ செட் ஆ) தெர்மோ பிளாஸ்டிக் **அ) தெர்மோ செட்** இதில் உருவாக்கப்பட்ட பொருள் வடிவம் மறுமுறை அதே வடிவத்தில் அதே முறையில் உருவாக்க முடியாது . (உ.ம்) மோட்டார் வாகனம் மற்றும் விமான உதிரிபாகங்கள் **ஆ) தெர்மோ பிளாஸ்டிக்** இவ்வகையான பிளாஸ்டிக்காலான பொருட்களை மறுமுறையும் பயன்படுத்தலாம் (உ.ம்) பைப்பர் மற்றும் பிளாஸ்டிக் பொருள்கள் மேலும் பிளாஸ்டிக்கினால் உருவாக்கப்படும் தெர்மோ˙ பிளாஸ்டிக் பொருட்களுக்கு

	1988 -ல் அமெரிக்காவில் உள்ள பிளாஸ்டிக் தயாரிக்கப்படும் தொழிற்சாலைகளின் சங்கத்தின் சார்பாக . வகை 1 முதல் 7 வகைகளாகப் பிரிக்கப்பட்டுள்ளன. அ) பாலி எத்திலின் தெர்தலேட் . ஆ)உயர் அழுத்த பாலி எத்திலின் இ)பாலிவினைல் குளோரைடு ஈ)குறைந்த அழுத்த பாலி எத்திலின் உ) பாலிபுரப்பைலின் ஊ)பாலிஸ்டிரின் எ) பாலிகார்பனேட் , **அ) பாலி எத்திலின் தெர்தலேட் .** இதில் பாலி எத்திலின் தெர்தலேட்டின் பயன்களைக் குளிர்பானங்கள் மற்றும் தண்ணீர் பாட்டில்கள் ஆகியவற்றில் காணலாம் . இதன் குறியீடு எண்- 1 **ஆ)உயர் அழுத்த பாலி எத்திலின்** இது பால் ,தண்ணீர்பாட்டில் மற்றும் சாம்பு பாட்டில் ஆகியவற்றில் காணலாம் . இது பாதுகாப்பான பிளாஸ்டிக் பொருட்கள் தயாரிப்பதற்குப் பயன்படுகிறது . இதன் குறியீடு எண்- 2

	இ)பாலிவினைல் குளோரைடு இவ்த வகைப் பிளாஸ்டிக் பொம்மைகள் , ஆயில் மற்றும் உணவுப்பொருட்களை அடைப்பதற்குப் பயன்படுகிறது . இதன் குறியீடு எண்- 3 **ஈ)குறைந்த அழுத்த பாலி எத்திலின்** இவ் வகைப் பிளாஸ்டிகானது தேன் மற்றும் ரொட்டி வகைகள் பேக்கிங் செய்வதற்கு பயன்படுகிறது . இதன் குறியீடு எண்- 4 இவ் வகை பிளாஸ்டிக் மனிதன் பயன்படுத்த பாதுகாப்பானது . **உ) பாலிபுரப்பைலின்** இவ் வகை பிளாஸ்டிகானது மருந்து பாட்டில்கள் மற்றும் குழந்தை பால் டப்பாக்கள் தயாரிக்க பயன்படுகிறது . இவ் வகை பிளாஸ்டிக் மனிதன் பயன்படுத்த பாதுகாப்பானது . இதன் குறியீடு எண்- 5 **ஊ)பாலிஸ்டிரின்** இவ் வகை பிளாஸ்டிகானது டிஸ்போசபல் கப் மற்றும் சிடி(கம்யூட்டர்) க்கள் தயாரிக்க பயன்படுத்தப்படுகிறது . இதன் குறியீடு எண்- 6 இந்த வகை பிளாஸ்டிக் மனிதனுக்குத் தீங்கு விளைவிக்கக்கூடியது

பிளாஸ்டிக்கின் பயன்பாடுகள் யாவை ? பிளாஸ்டிக்கினால் உருவாகும் நச்சுகெமிக்கல் எந்த வகையாகப் பாதிப்புகளை மனிதனுக்கு ஏற்படுத்துகிறன ?	**எ) பாலிகார்பனேட்** இவ் வகை பிளாஸ்டிகானது கம்யூட்டர், செல்போன் , சில ஜீஸ் (குளிர்பானம்) பாட்டில்கள் , குழந்தைகள் பயன்படுத்தும் பால்டப்பாக்கள், பிளாஸ்டிக்காலான உறிஞ்சும் பாட்டில்கள் தயாரிக்கப் பயன்படுத்தப்படுகிறது. இதன் குறியீடு எண்- 7 இவ் வகை பிளாஸ்டிக் மனிதனுக்கு அதிகம் தீங்கு விளைவிக்கக்கூடியது. **பிளாஸ்டிக்கின் பயன்பாடுகள் :** • உணவுகளைப் பேக்கிங் செய்வதற்கு • கட்டிட பயன்பாட்டிற்கு • போக்குவரத்திற்கு • மின்சாதனப் பொருட்களைத் தயாரிப்பதற்கு • விவசாய பயன்பாட்டிற்கு • மருத்துவ பயன்பாட்டிற்கு என பிளாஸ்டிக்கின் பயன்பாடு இன்றைய காலகட்டத்தில் மிகவும் இன்றியமையாததாக உள்ளது . **பிளாஸ்டிக்கினால் உண்டாகும் நச்சுகெமிக்கல் எந்த வகையாக மனிதனுக்கு பாதிப்புக்களை ஏற்படுத்துகிறன ?** ▪ பிளாஸ்டிக் டப்பாக்களில் அடைத்துவைக்கப்பட்ட உணவுகளை உண்பதால் மற்றும் குழந்தைகள் பிளாஸ்டிக்கை மெள்ளும் போது .. ▪ பிளாஸ்டிக் கழிவுகளை எரிப்பதால் உருவாகும் வாயுவை சுவாசிப்பதால் ▪ பிளாஸ்டிக் உறையில் பாதுகாக்கப்படும் இரத்தம் மற்றும் குளுகோஸ் பாட்டில்களினால் .

பிளாஸ்டிக்கை எரிப்பதால் ஏற்படும் விளைவுகள் யாவை?	▪ பிளாஸ்டிக்கினால் உற்பத்தி செய்யப்படும் செப்பல்கள், கிளவுஸ் (கையுறை) ஆகியவற்றால் உண்டாகும் தோல் அலர்ஜி . **பிளாஸ்டிக்கை எரிப்பதால் ஏற்படும் விளைவுகள் :** ▪ பிளாஸ்டிக்கை எரிப்பதால் டையாக்சின் என்ற நச்சு வாயு வெளிவருகிறது. இதனை மனிதன் மற்றும் உயிரினங்கள் சுவாசிப்பதால் நுரையீரல் , கல்லீரல் , வயிறு , சிறுநீரகம் , மூளை ஆகியவற்றில் புற்றுநோய்(கேன்சர்) ஏற்படுகிறது . ▪ மேலும் சுற்றுப்புற சூழல் மாசு ஏற்பட்டு ஓசோன் படலத்தில் துளை ஏற்பட்டு சூரியனின் கதிர்வீச்சு நேரடியாக பூமியைப் பாதிக்கிறது .
பிளாஸ்டிக் கழிவுகளை முறையற்று வெளியேற்றுவதால் ஏற்படும் விளைவுகள யாவை ?	**பிளாஸ்டிக் கழிவுகளை முறையற்று வெளியேற்றுவதால் ஏற்படும் விளைவுகள் :** • ஆற்றுப் படுகைகளில் பிளாஸ்டிக் கழிவுகள் சேருவதால் நீரோட்டம் தடைபடுகிறது. விளைநிலத்திலிருந்து மண்புழு வெளியேறி விவசாயம் பாதிக்கப்படுகிறது . • பூமியின் உறிஞ்சும் தன்மை பாதிக்கப்படுகிறது . • மீன்கள் முட்டையிடுவது தடைபட்டு மீன்கள் உற்பத்தி பாதிக்கப்படுகிறது. • விலங்கினங்கள் மற்றும் பறவைகள் பிளாஸ்டிக் பொருட்களை உண்பதால் உயிரிட நேருகிறது .
மனித வாழ்க்கையில் பிளாஸ்டிகினை தடுக்கும் முறைகள் எனனென்ன ?	**தடுப்பு முறைகள் :** • உணவு உண்பதற்கு இலை, அலுமினியம் ,களிமண் மற்றும் மரத்திலான பொருட்களால் உருவாக்கப்பட்ட தட்டுகளைப் பயன்படுத்த வேண்டும்

	• பிளாஸ்டிக் பொம்மைகளை வாங்கும் போது பாதுகாப்பு அறிவிப்புகள் உள்ளவைகளைப் பார்த்து வாங்க வேண்டும் • பிளாஸ்டிக் கழிவுகளைச் சேகரித்து சுத்திகரிப்புக்கு அனுப்பவேண்டும். பிளாஸ்டிக் சுத்திகரிப்புக்குப்பின் பிளாஸ்டிக்காலான வீடு மற்றும் சாலைகள் அமைக்க பயன்படுத்தலாம் .. • உணவுப்பொருட்களை அலுமினியம் மற்றும் எவர்சில்வர் பாத்திரங்களை பயன்படுத்தி குளிரப்பதனப் படுத்தவேண்டும் • கேரி பேக்கிற்குப் பதிலாக துணி பைகளை பயன்படுத்த வேண்டும் .

முடிவுரை :

பிளாஸ்டிக்கின் பயன்பாடுகளை இதுவரைப் பார்த்த வகையில் அதிகப்படியான பாதிப்புகள் மட்டும்தான் நமக்கு ஏற்படுகிறது என்பது தெளிவாகிறது அதுமட்டுமல்லாமல் நமது பூமியில் எங்கு பார்த்தாலும் இந்த பிளாஸ்டிக் குப்பைகளாக சூழ்ந்து கிடப்பதால் தீப்பிடித்து எரிந்து காற்றோடு கலந்து சுற்றுச்சூழலுக்கு பெரும் கேடு ஏற்பட்டு மனிதனுக்குக் கண் எரிச்சல்,மூச்சுதிணறல், இதயநோய்,சிறுநீரகக்கோளாறு , தோல்நோய் மற்றும் புற்றுநோய் ஏற்பட முக்கிய காரணமாக அமைகிறது என்பதை அறிந்தோம். இதற்கு மாற்று வழி என்னவென்றால் சணல் மற்றும் துணியிலான பைகளைப் பயன்படுத்தலாம், பாக்குமட்டை, தேக்கு இலை, வாழை இலை, போன்றவற்றாலான உணவுப்பொருட்களை உண்பதற்குத் தட்டுகளாகப் பயன்படுத்தலாம் அதுபோல மண்பானை ,பித்தளை, அலுமினியம், எவர்சில்வர் போன்ற சுற்றுப்புற சூழல் மாசுபடாத பொருட்களை நம் முன்னோர்கள் பயன்படுத்தினரே இதில் எவ்வித மாசுவும் எந்த வகையிலும் ஏற்படவில்லை என்பதே நிதர்சனமான உண்மை . நமது நாட்டில் ராஜஸ்தான் , சிக்கிம் ஆகிய மாநிலங்களில் பிளாஸ்டிக் பயன்படுத்துவதற்குக் கட்டுப்பாடு கொண்டுவந்துள்ளனர் . அது போல தமிழ் நாட்டிலும் கன்னியாகுமரி, உதகை, கொடைக்கானல் ஆகிய பகுதிகளில் பயன்படுத்த தடைசெய்யப் பட்டுள்ளது. அதுபோல் தமிழகத்தின் மற்றப்பகுதிகளிலும் மாநகராட்சி, நகராட்சி மற்றும் ஊராட்சிகளில் தடை செய்யப்பட்டுள்ள இந்த பிளாஸ்டிக்கை படிப்படியாக குறைக்க அரசாங்கம் சட்டம் கொண்டு வந்தாலும் நமது வாழ்க்கையில் பிளாஸ்டிக்கில்லா உலகத்தைப் படைக்க சூளுரைப்பது நாம் ஒவ்வொருவரின் கடமையாகும்.

PHOTOGALLEY

Distribution of questionnaire to students

Investigator Educating to the students using video assisted teaching programm