EFFECTIVENESS OF NEEM OIL UPON PEDICULOSIS

By

LINCY ISSAC

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

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DECLARATION

I hereby declare that the present dissertation entitled **"Effectiveness Of Neem Oil Upon Pediculosis"** is the outcome of the original research work undertaken and carried out by me, under the guidance of **Dr.Latha Venkatesan.,** M.Sc (N)., M.Phil., Ph.D., Principal and **Mrs.Shobana G,** M.Sc (N)., Professor, Community Health Nursing, Apollo College Of Nursing, Chennai. I also declare that the material of this has not formed in anyway, the basis for the award of any degree or diploma in this University or any other Universities.

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SYNOPSIS

An experimental study to assess the effectiveness of neem oil upon pediculosis among school children at selected orphanages, Chennai.

Objectives of the Study were

1. To assess the prevalence of pediculosis among children.
2. To determine the effectiveness of neem oil upon pediculosis among children.
3. To compare the pre intervention and post intervention status of pediculosis in control and experimental group of children.
4. To find out the association between selected demographic variables with the pre and post intervention status of pediculosis in control and experimental groups of children.
5. To assess the knowledge of control and experimental group of children regarding pediculosis.
6. To identify the level of satisfaction after neem oil application in the experimental group of children.

The conceptual frame work of the study was developed based on King's goal attainment theory. The study variables were neem oil application and Pediculosis. Hypotheses were formulated.

An extensive review of literature and guidance by experts formed the foundation to the development of the study instruments. An experimental research approach with true experimental design was used. The present study was conducted in the Don Bosco Beatitudes Orphanage, Vyasarpady, for control group and Dazzling Stone Orphanage

for experimental group, Kundrathur. The sample size was 60 and was selected through simple random sampling method, 30 were assigned to control group and 30 were assigned to experimental group.

The investigator used a demographic variable proforma, degree of pediculosis, observational checklist on signs and symptoms of pediculosis, and interview schedule on knowledge regarding prevention of pediculosis and a rating scale on the level of satisfaction on application of neem oil. The tools were translated into Tamil. The data collection tools were validated and reliability was established .After the pilot study, the data for the main study was collected for a period of one month. The collected data was tabulated and analyzed using descriptive and inferential statistics.

Major findings of the study

- The prevalence of pediculosis revealed that about 86% of the school children residing in the orphanage had pediculosis, which presented as mild and moderate pediculosis (25.25%, 60.90%) respectively.

- A significant percentage of the children in the control group were between 12 and 13 years of age (43.3%) and class of study 7^{th} -8^{th} (43.3%).Most of the children in the experimental group were between 10 and 11 years of age (60%) and class of study 5^{th} -6^{th} (60%). Most of the children in both control and experimental groups were in the orphanage for more than 3 years (53.3%, 56.7%) and length of hair >15cm (83.3%, 36.7%) respectively. Only a significant percentage of children were staying in the orphanage for 1-3 years (40%, 36.7%) both in the control and experimental groups.

- Most of the children both in the control and experimental group had 3rd degree of pediculosis (70%, 73.34%) (Children with mobile lice) before neem oil application. After neem oil application most of the children in the control group had 3rd degree of pediculosis (73.3%) as where in the experimental group had 1st degree (70%) of pediculosis.

- Majority of the children had moderate signs and symptoms (96.7%, 93.3) before neem oil application both in the control and experimental groups. Most of the children in the experimental group had mild signs and symptoms (83.3%) after neem oil application where as in the control group signs and symptoms (93.3%) persist in the same level.

- Most of the children had inadequate knowledge (76.66%, 63.33%) and significant percentage of the children had moderately adequate knowledge (23.33%, 36.66%) both in control and experimental group respectively.

- In control group, there was no significant difference in the degree of pediculosis before neem oil application (M=2.70, SD=0.450) and after neem oil application (M=2.73, SD=0.450).In contrast, in the experimental group, degree of pediculosis was decreased (M=0.70, SD=0.466) when compared to the degree of pediculosis before neem oil application (M=2.73, SD=0.450). The difference was found to be statistically significant at $p< 0.001$ degree of pediculosis and it can be attributed to the effectiveness of neem oil application.

- There was no significant association between the selected demographic variables like age, class of study, length of stay in the orphanage and length of hair and signs and symptoms of pediculosis of school children before and after neem oil application both in the control and experimental groups. Hence the null hypothesis Ho2 was not accepted.

- There was no significant association between the selected demographic variables like age, class of study, length of stay in the orphanage and length of hair and level of knowledge both in the control and experimental groups. Hence, the null hypothesis Ho3 was rejected.

- Most of the children (73.3%) were highly satisfied and only a significant percentage of children (26.7%) were satisfied with the neem oil application in the experimental group.

Recommendations

- A similar study could be undertaken on a large scale for a more valid generalization.
- The study could be replicated in different settings and in the different population.
- A comparative study could be conducted to test the effectiveness of neem oil and combing the hair upon pediculosis.
- A similar study can be conducted with coconut oil.

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CHAPTER - I

INTRODUCTION

Background of the study

"The future promise of any nation can be directly measured by the present prospects of its youth"

A child is a marvelous creation of God. A healthy child is the greatest gift. Today's children represent literally the future of the country. Children are generally a human between the stages of birth and puberty or in the developmental stage of childhood, between infancy and adulthood. India's children account for more than one third of its population. 40% (400 million) of India's population is below the age of 18 years which is the world's largest child population and this population is vulnerable to many diseases.

Health status of children of a nation is a highly reliable index of the health of its population. The childhood period is the vital period because of the so called socialization process which transmits attitudes, customs and behavior. Children are vulnerable to disease, death, and disability owing to their age, sex, place of living, socio-economic class and a host of other variables. The main health problems encountered in the child population are low birth weight, malnutrition, infections and parasitosis, accidents and poisoning, and behavioral problems. Among this parasitosis is a major health problem.

In India pediculosis is the major parasitic infection that affects children. Roberts et al., who conducted a study in 2005, estimated that 1.6% to13% of elementary school

children are affected with pediculosis. Pediculosis is defined as a parasitic infestation of the hair on the head and is characterized by itching of the scalp as the result of live lice in the hair or ova (nits) attached to the hair shafts. It is transmitted by direct contact with infested persons, their clothing, and or personal articles.

Transmission of pediculosis occurs in homes, schools, churches, camps, playgrounds and backyards as well as in any other areas where children freely interact. It is also known as lice infestation. Unhygienic conditions and the people with long hair are more prone to lice infestation. It is characterized by marked itching, and the formation of various inflammatory lesions, such as papules, pustules and excoriations—resulting from the irritation produced by the parasites and from the scratching to which the intense pruritus gives rise. The other symptoms of head lice infestation are sensation of a insect crawling on scalp, dandruff like flakes stuck in the hair and hair loss can also be indicative of lice infestation.

Lice infestation can lead to severe irritation and discomfort and in rare cases leaving this condition untreated can lead to anemia. In fact, an eczematous eruption of the pustule type soon results, attended with more or less crust formation. In consequence of the cutaneous irritation the neighboring lymphatic glands may become inflamed and swollen, and in rare cases suppurate. The occipital region is the part which is usually most profusely infested, especially in children, scattered papules, vesico-papules, pustules and excoriations may often be seen upon the forehead and neck.

In pediatric practice, pediculosis infestation is a common problem. It can cause considerable distress to children and their families and may lead to bullying and social

stigmatization. Throughout the world, treatments for pediculosis capitis fall into three main categories: medicinal products, medical devices and traditional remedies. Medicinal products invented for pediculocides are medicare, 1% permethrin, pyrethrin-based products, lindane or gamma benzene hexachloride and malathion. All these agents are expensive and repeated treatment is required which makes it even more expensive.

In the year 2006, a descriptive study conducted by Udai on pediculosis among school children explained that pediculosis is a common problem of school children and it needs preliminary treatment. Neem is one of the most popular trees in traditional medical systems and is increasingly becoming important in herbal alternative therapy. For centuries the neem tree has been known as a wonder tree in India. Traditionally used in Ayurvedic remedies as an antiseptic to fight viruses and bacteria.

The Vedas called neem 'Sarva roga nivarani' which means one that cures all ailments. The importance of neem tree has been recognized by Natural Research Council. They published a report in 1992 entitled 'Neem'-a tree for solving global problems. The US Academy of sciences currently attaches very high importance to the neem tree. The United Nations declared neem as the 'Tree of the 21st Century. Because of its wider variety of application it is commonly called the friend and protector of the Indian villages.

The global scenario is now changing towards the use of non toxic plant products having traditional medicinal use. For the last few years there has been an increasing trend and awareness in neem research**.** Neem is primarily indigenous to India and it grows rapidly in any soil condition. Neem is a naturally, easily and cheaply available

plant everywhere and it is found to be very safe to use without any side effects. Azadirachtin, is the most important active ingredient of neem and it has medicinal properties that will treat the problem.

Need for the study

In India, pediculosis is a serious problem in both urban and rural areas. Pediculosis capitis or head louse infestation has been known to be a world wide public health problem especially among school age children for a long time. Age group at risk is generally 6-15 years, adults and elderly who have familial contact with a child or primary school children are also susceptible to infection. It is widely accepted that the school environment favors in the spread of the infestation simply because it affords opportunity for continual close contact of children.

A survey by Idavl (2001) among school children between the ages of 5 and 12 years in Kerala stated that the prevalence of pediculosis was 74.1% in boys and 96.6% in girls**.** However prevalence of infestation and pattern of transmission is also largely influenced by the family size and number of school age children in the family. Department of Parasitology, in Hebrew University (1999), conducted a study which described that pediculosis are prevalent worldwide. In developing countries, the infestation rate of 4 to 13 year-old children remains high despite preventive efforts.

In Maharashtra, Wardha district, (2000-2001) a study was conducted by Bhatia et al; on 337 males and 329 females upto the age of 14 years and found a prevalence rate of pediculosis capitis infestation of 20.42%. Infestation was detected in 8.9% of males and 32.2% of females. The infestation rate increased from 9.31% to 30.17% with

the age groups from 0-4 years to 10-14 years. The study also revealed that 54.4% of children did not wash their hair daily.

Khokhar (2002) conducted a study among primary school children of four of the government run schools of Delhi upon pediculosis capitis. It showed that out of a total of 940 study subjects studied 156 (16.59%) were found to be infested with head louse. Significantly higher proportions of girls (20.42%) were found to be infested as compared to boys (13.86%). 65.38% of those infested were aware of the infestation.

A descriptive study was conducted by Donnelly (2006) in the Unites States regarding pediculosis prevention and control strategies of community health and school nurses. Traditional treatment of pediculosis involves the direct application of pesticides to the scalp of the infested individuals. The National Pediculosis Association recommends regular screening to control lice outbreaks in school settings. A National Pediculosis Association survey identified specific lice management strategies used by community health nurses and school nurses working in school systems. Results of this national survey indicated significant variation in management strategies.

Preventive and therapeutic practices such as head shaving and the No-Nit policy of excluding infected children from school can also induce social stress. Prevention of head lice by means of lice combing device, mechanical removal, using home remedies, and applying pediculocide and health education given by the public health nurse in the schools, camps, exhibitions and environmental modifications are measures taken in order to deal with pediculosis. But the problem of pediculosis still persists.

Reutemann et al., (2008) conducted a study upon neem. The neem tree has been considered one of the most useful and versatile plants in the world. Neem oil has been used for both homeopathic remedies and as a pesticide. Both systemic and contact reactions have occurred with the use of neem oil. Natural products have been used as traditional medicine for thousands of years and recently have been of increasing interest, since the costs are usually lower and they are considered less toxic by the public.

The literature says that neem is effective in treating pediculosis and is also available easily. Neem Oil contains substances which mimic insect hormones - called 'ecdysones'. These substances give 'mixed messages' to the pediculosis, consequently depressing feeding, breeding, and metamorphosis. These messages also prevent unhatched eggs from developing and hatching. This approach also avoids the development of resistance in future generations. Exposing pediculosis to Neem results in a gradual weakening of their 'will to live' & perform the basic functions of all living organisms. After a short period of time the problem will simply vanish.

The investigator found many children suffering from pediculosis in rural area during her posting. So she was motivated to try out neem oil application and to see its effect in children with pediculosis. Neem oil is available locally, is of low cost and effective for treating head lice. As supported by the above study, there is a lack of evidence- based trials evaluating the effectiveness of natural treatment of pediculosis. So the investigator felt the need for the study.

Statement of the Problem

An experimental study to assess the effectiveness of neem oil upon pediculosis among school children at selected orphanages, Chennai.

Objectives of the Study

7. To assess the prevalence of pediculosis among children.
8. To determine the effectiveness of neem oil upon pediculosis among children.
9. To compare the pre intervention and post intervention status of pediculosis in control and experimental group of children.
10. To find out the association between selected demographic variables with the pre and post intervention status of pediculosis in control and experimental groups of children.
11. To assess the knowledge of control and experimental group of children regarding pediculosis.
12. To identify the level of satisfaction after neem oil application in the experimental group of children.

Operational Definitions

Effectiveness

In this study it refers to the expected outcome of neem oil application on degree of pediculosis among children as measured by observational checklist on signs and symptoms of pediculosis.

Neem oil

In this study neem oil refers to commercially available oil prepared from the neem seeds, which is applied on head twice a week for half an hour during morning time for a period of three weeks.

Pediculosis

Tiny, wingless insects that reside within the hair which also lay eggs at the base of the strand of hair which can be graded as 0, 0+, 1, 2, and 3.

Children

In this study it refers to the children studying in school who are having pediculosis in the age group of 10-15 years.

Assumptions

The study assumes that

- School children may have high incidence of pediculosis.
- Pediculosis is the main problem among the orphanage children.
- Pediculosis can be treated.
- Neem oil is a product which is easily available and has various therapeutic properties.

Null Hypotheses

Ho1: There will be no significant difference between pre and post intervention status of pediculosis among school children.

Ho2: There will be no significant association between demographic variables and pre and post intervention status of pediculosis among school children.

Ho3: There will be no significant association between demographic variables and knowledge regarding pediculosis.

Delimitations

The study is limited to

- school children who are residing in selected orphanages in Chennai.
- school children who are aged between 10-15 years.
- 4 weeks

Conceptual Framework of the study

The conceptual framework deals with the interrelated concepts that are accessible together in some rational scheme by virtue of their relevance to a common theme (Polit and Beck, 2007).

This section deals with conceptual framework adopted for the study. A conceptual framework or model provides the investigator the guideline to proceed to attain the objectives of the study based on a theory. It is a schematic representation of the steps, activities and outcomes of the study.

Conceptual framework of present study is based on **"King's Goal Attainment Theory"**. Imogene King's Goal Attainment Theory is based on the personal and

interpersonal systems including interaction, perceptions, judgment, action, reaction, interaction, transaction and perception.

According to Imogene King; Nursing is defined as the process of action, reaction, interaction, whereby nurses and clients share the information about their perception. Through perception and communication they identified the problems through which they set goals and take necessary actions.

The investigator adopted King's Goal Attainment Theory as a basis for conceptual framework.

Perception

A person imports energy from the environment and transforms, processes it and stores it. The study assumes that there is a need to reduce the symptoms of pediculosis. The investigator perceives that there is a need for reducing symptoms of pediculosis with easy accessibility. The participants also perceive that they have the symptoms of pediculosis and which need to be alleviated. This imposes the need for neem oil application.

Judgment

Analyze the areas of action to be carried out. Thus the investigator analyzes the need for neem oil application for school children with pediculosis. The school children are also analyzed on the need for neem oil application to relieve the symptoms of pediculosis.

Action

Individual experts perceived energy to demonstrate by observable behaviors by taking physical activity. In this study the investigator takes steps to perform neem oil application. The school children in the control group have no symptom reduction strategy, where as the experimental group undergoes neem oil application to reduce the symptoms of pediculosis.

Reaction

Reaction means developing action and acting on perceived choices for goal attainment. The action of the investigator makes necessary arrangement to perform neem oil application twice a week for three weeks with the duration of 30 minutes at each sitting.

Interaction

Refers to verbal and nonverbal behaviors between the individual and the environment or among two or more individuals. It involves goal directed communication. Action leads to interaction where the investigator applies neem oil to the experimental, and the control group undergoes their routine activities.

Transaction

Transaction is the mutually defined goals of two or more individuals and the means to achieve them. They reach an arrangement about how to attain these goals and then set about to realize them. Thus, the researcher and participants mutually set the goals. In this study subjects from the experimental group shows satisfactory relieved

symptoms and decreased the degree of pediculosis which helps both the investigator and the client to set goal to alleviate the future symptoms. The same signs and symptoms and degree of pediculosis are maintained in the control group. Results are measured through degree of pediculosis and observational checklist on signs and symptoms of pediculosis.

Feedback

Outcome may either be satisfactory or unsatisfactory. If satisfactory it shows the effect of neem oil application. If unsatisfactory replans the activity. In this study the investigator appraise the level of satisfaction on neem oil through rating scale.

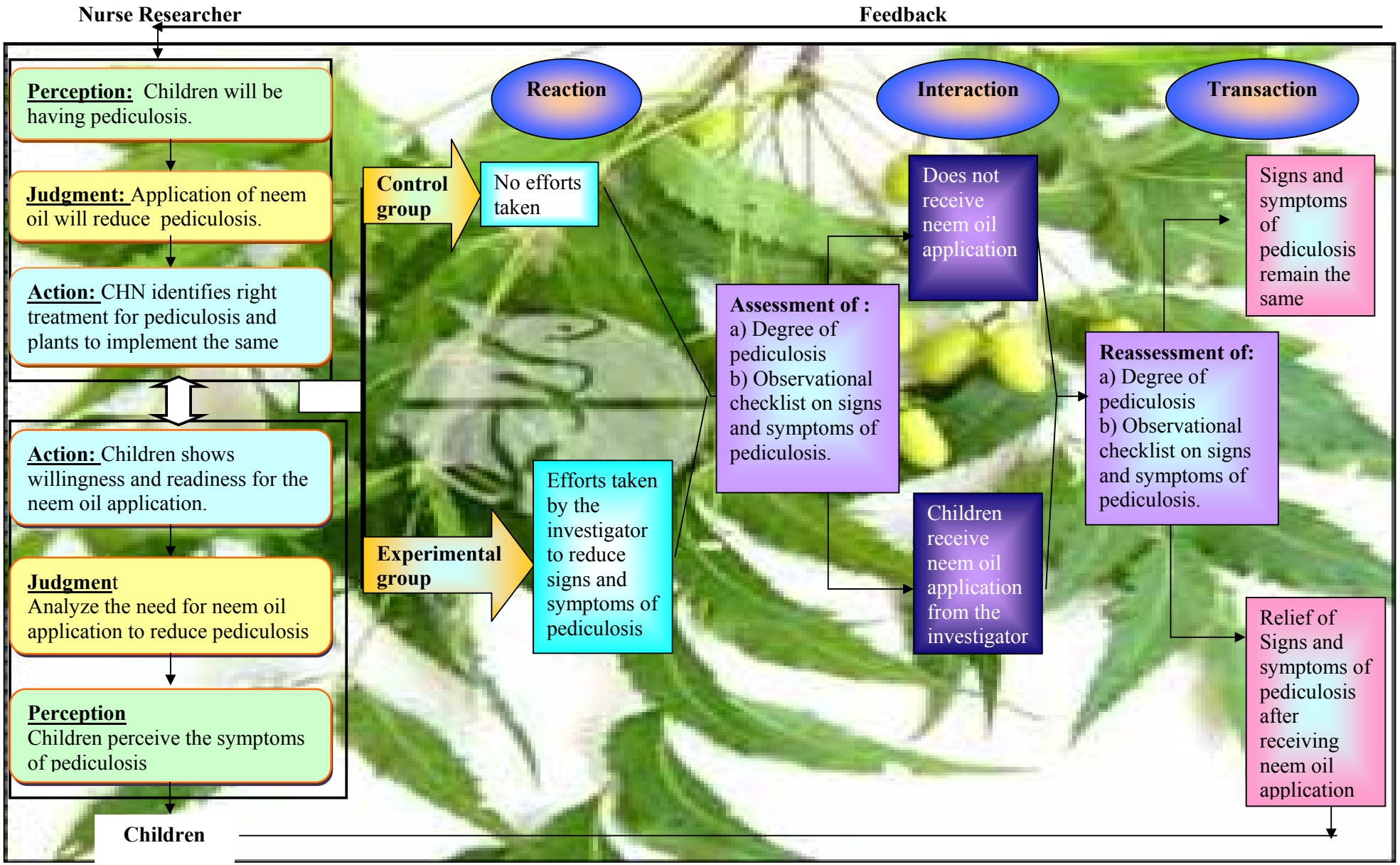

Fig: 1. Conceptual framework on neem oil application upon pediculosis based on King's Goal Attainment theory

Projected Outcome

The projected outcome will be the reduction of pediculosis after neem oil application in the experimental group.

Summary

This chapter has dealt with the background of the study, need for the study, and statement of the problem, objectives, operational definition, hypothesis, assumption, delimitation and conceptual framework.

Organization of the report

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

In chapter II : Review of literature

In chapter III: Research methodology which includes research approach, research design, research settings, population, samples, sampling technique, eligibility criteria, selection and development of study instrument, validation and reliability of the tool, pilot study, plan for data collection, plan of data analysis and summary.

In chapter IV : Analysis and interpretation of data

In chapter V : Summary, conclusions, implications, recommendations, and Limitations.

CHAPTER - II

REVIEW OF LITERATURE

A review of literature involves the systematic identification, location, scrutiny and summary and written material that contain information on the research problem. (Polit and Beck 2004).

The task of reviewing literature involves the identification, location, selection, critical analysis and written description of existing information on the topic of interest. In this chapter an attempt has been made to bring out the available literature which helps in projecting the widened perspectives of the study.

This chapter deals with a review of published and unpublished research studies and from related material for the present study. The review helped the investigator to develop an insight into the problem area. This helped the investigator in building the foundations of the study. The review of literature for the study is presented under the following heading-

- **Literature related to pediculosis**
- **Literature related to neem**
- **Literature related to neem oil**

Literature related to pediculosis

A cross sectional survey was conducted by Counahan (2006) for parents of primary school aged children in Victoria, North Queensland to find out the knowledge, attitudes and practices of parents regarding head lice investigations. The research

findings were only 7.1 % of 1338 who completed the questionnaire answered 10 knowledge questions correctly and more than one third failed to answer half correctly. There was weak negative correlation between parents' knowledge and prevalence of active pediculosis in the school.

In the year 2006, Governorate conducted an observational descriptive study upon three primary school pupils in Sohag to estimate the incidence and the epidemiological factors related to Pediculosis capitis infestation amongst the selected population. Rural pupils were more frequently, albeit insignificantly, infested (17.44 versus 14.88 %, $p>0.05$). Pupils older than 10 years had a significantly higher risk to be infested when compared to younger ones (R.R.: 1.57, range from 1.52 to2.0, O.R.: 1.72, P: 0.0004). The girls were affected two times more than the boys.

A descriptive study was conducted by Jahnke et al., (2003) in German to assess the pediculosis capitis. During the routine medical examination of 5-6-year-old pre-school children in Braunschweig city (n=1 890) the children were also examined for the presence of head lice and head lice-associated pathology. Visual inspection of five predilection sites was used to diagnose head lice infestation. Head lice infestation was diagnosed in 14 children out of the 1890 children (0.7%).

Patrick (2001) conducted a pilot study on prevalence of head lice infestation in a population of Saudi Arabian children over a period of 2 months. Three hundred consecutive children attending the general practioner for any reason were examined. In that 37 cases of active infestation were found, this was an overall prevalence of 12%. The infestation of 30% was in the age group of 6-8years and 16% in the age group of 10

years. These results showed a high head lice infestation, particularly in the early school years.

In the year (2000) Silva et al., performed a cross-sectional study by interviewing the heads of households of 100 randomly chosen residences within the study area. The results obtained showed that 13% were infested during the first week of the survey, and 86% in the 24 weeks prior to the study. The number of positive cases increased with increasing resident number, and decreased in families with parents with a higher educational level. Itching was the principal clinical manifestation and caused sleep compromise in 65% of respondents.

Silvia et al., (2000) conducted a descriptive study to determine the intensity of Pediculus capitis infestation (abundance) among Argentinean schoolchildren. The study included 1,370 schoolchildren (692 girls, 678 boys) from 26 schools of the province of La Rioja (21 public schools, five private schools). The general prevalence was 61.4% (girls: 79%; boys: 44%, $p<0.001$). Private schools showed lower prevalence than public schools ($p=0.02$), especially due to the low prevalence in boys.

In the year 1998 Ebomoy conducted a survey among 6882 primary school children living in Nigeria which revealed that 3.7% of the children were infested with pediculosis humanus capitis. Infestation was determined by inspection of each child head with the aid of magnifying hand lens. The result showed that the infestation rate was 3% girls and only 2.1% among boys of low socio economic status. Factors associated with the onset of pediculosis included overcrowding, long hair, family size, age, living in a sordid environment and personal hygiene.

In Australia a descriptive study was conducted by Richard (1997) to determine the prevalence of infestation with head lice in children. All 735 pupils from grade preschool to five of a government run primary school were invited to participate in the cross – sectional survey. Overall, 212 boys and 244 girls were examined. Head lice were more prevalent in girls than boys ($p<0.001$).

Eileen et al., (1991) conducted a descriptive Study in America, to determine the intensity of Pediculus capitis infestation among Argentinean schoolchildren. The study included 1,370 schoolchildren (692 girls, 678 boys) from 26 schools of the province of La Rioja (21 public schools, five private schools). Five degrees of parasitism were classified: 0) children with no signs of pediculosis; 0+) children with evidence of past infestation; 1) children with a recent infestation and low probability of active parasitism; 2) children with a recent infestation and high probability of active parasitism; 3) children with mobile lice (active pediculosis). The general prevalence was 61.4% (girls: 79%; boys: 44%, $p<0.001$).

In Nigeria a prevalence study was conducted to assess the pediculosis capitis by Ebomoyi, (1988), among urban and rural schoolchildren in Ilorin, and two neighboring rural communities. Among the pupils, of 1,842 urban schoolchildren examined 57 (3.1%) were infested, compared with only one (0.1%) of 1,056 rural school pupils. More female pupils had infestations. Children less than age five, primary I pupils, and pupils in primary VI were not infested. Urban schoolchildren with 41–45 lice per head constituted 7.7% of those infested with nits and lice. Most infected children had one-five and 11–15 lice per head.

Literature related to neem

In Hyderabad a study was conducted by Kumar (2010) to know Azadirachtin interaction with the tumor necrosis factor (TNF) binding domain of its receptors and inhibits TNF-induced biological responses. The data suggest that azadirachtin modulates cell surface TNFRs antibody thereby decreasing TNF-induced biological responses. Thus, azadirachtin exerts an anti-inflammatory response by a novel pathway, which may be beneficial for anti-inflammatory therapy.

In the year (2009) Moslem has conducted a study to know the effect of ethanolic, hexane and methanolic extracts of neem seeds and leaves. Results indicated that seeds and leaves extracts could cause growth inhibition of tested fungi, although the rate of inhibition of tested fungi varied with different extracts and concentrations. But all these extracts and concentrations of extract inhibited the growth of pathogenic fungi at a significant level. Azadirachtin, nimonol and expoxyazdirodione were detected from neem extract by using High Performance Liquid Chromatography (HPLC). We can conclude that neem leaves and seeds extracts were effective as antifungal against all tested fungi but F. oxysporum and R. solani were the most sensitive fungi.

Subapriya et al., Department of Biochemistry (2005) conducted a study on the Medicinal properties of neem leaves. Azadirachta indica, commonly known as neem, has attracted worldwide prominence in recent years, owing to its wide range of medicinal properties. Neem has been extensively used in Ayurveda, Unani and Homoeopathic medicine and has become a cynosure of modern medicine. More than 140 compounds have been isolated from different parts of neem. All parts of the neem

tree- leaves, flowers, seeds, fruits, roots and bark have been used traditionally for the treatment of inflammation, infections, fever, skin diseases and dental disorders.

A clinical study was conducted by Bandyopadhyay et al., (2004) on the effect of Neem (Azadirachta indica) bark extract on gastric secretion and gastroduodenal ulcer. In this study a group of patients suffering from acid-related problems and gastro duodenal ulcers were orally treated with the aqueous extract of Neem bark. The lyophilised powder of the extract when administered for 10 days at the dose of 30 mg twice daily caused a significant ($p < 0.002$) decrease (77%) in gastric acid secretion. The research findings showed that the volume of gastric secretion and its pepsin activity were also inhibited by 63% and 50%, respectively.

In New Delhi a study was conducted by Saxena et al., (2004) on role of selected Indian plants in management of type 2 diabetes. This paper reviews the accumulated literature for 10 Indian herbs that have antidiabetic activity and that have been scientifically tested. Few of these herbs, such as momordica charantia, pterocarpus marsupium, azadirachta indica and trigonella foenum greacum, have been reported to be beneficial for treating type 2 diabetes. Mechanisms such as the stimulating or regenerating effect on beta cells or extra pancreatic effects are proposed for the hypoglycemic action of these herbs.

Literature related to neem oil

Morsy et al., (2008) conducted a study among school children who spend most of their daytime in crowded areas. Four commercially known insecticides and three medicinal plant extracts were studied to evaluate their pediculicidal activities in-vitro. The best result with medicinal plant extracts was achieved with neem oil and slope function. Although, neem oil extract was less active than malathion, yet it is more safe for human usage.

A preliminary pilot survey on head lice was conducted by Basheir (2006); Department of Zoology in twelve different representative areas in Sharkia Governorate was surveyed for head lice, Pediculus humanus capitis. The pre-valence was investigated among 120 houses containing 2,448 individual, with different age, sex and socioeconomic status. Examination was done by naked eye aided with hand-lens. A total of 137 individuals were infested. Children had significantly higher infestation rates than adults. Males had lower infestation rates than females. The head lice completely disappeared within 3 weeks among those patients treated by neem oil.

In (2005) Mumcuoglu et al conducted a study in vivo pediculicidal efficacy of a natural remedy. The natural remedy, which contains coconut oil, anise oil and neem oil, was applied to the hair of infested children two times for a three - week duration. Each treatment lasted for 30 minutes. The control pediculicide was a spray formulation containing permethrin, malathion, piperonyl butoxide, isododecane and propellant gas, which was applied twice for 10 minutes with a 10 day interval between applications.

The natural remedy was very effective in controlling louse infestations under clinical conditions and caused no serious side effects.

Yang et al (2004) conducted a study in Korea on insecticidal activity of plant essential oils against Pediculus humanus capitis. The insecticidal activity of 54 plant essential oils against female Pediculus humanus capitis was examined using direct contact and fumigation methods, and compared with the lethal activity of delta-phenothrin and pyrethrum, two commonly used pediculicides. In a filter paper contact bioassay with female P. humanus capitis, the pediculicidal activity was more pronounced in eucalyptus, marjoram, pennyroyal, azadirachta indica and rosemary oils than in delta-phenothrin and pyrethrum on the basis of LT50 values at 0.0625 mg/cm2.

In Iceland, Veal (2003) conducted a study to find out the potential effectiveness of essential oils as a treatment for headlice, Pediculus humanus capitis . Essential oils of aniseed, cinnamon leaf, red thyme, tea tree, neem oil, peppermint, nutmeg, rosemary, and pine were tested in vitro against lice, Pediculus humanus. All the oils except for rosemary and pine were found to be effective in the laboratory when applied in an alcoholic solution and followed by a rinse the following morning in an essential oil/vinegar/water mixture. Phenols, phenolic ethers, ketones, and oxides (1,8-cineole) appear to be the major toxic components of these essential oils when used on lice.

Mumcuoglu conducted an in vivo study in the year 2002 in Jerusalem on pediculocidal efficacy of a natural remedy. The study was conducted to examine the pediculicidal efficacy and safety of a natural remedy and to compare it with an open clinical study with a known pesticide spray. The natural remedy, which contains

coconut oil, anise oil and neem oil, was applied to the hair of infested children three times at 5 day intervals. Each treatment lasted for 15 minutes. The control pediculicide was a spray formulation containing permethrin, malathion, piperonyl butoxide, isododecane and propellant gas, which was applied twice for 10 minutes with a 10 day interval between applications. Altogether, 119 children were randomly treated with either the natural remedy or the control product. Treatment was successful with the natural remedy in 60 children (92.3%) and with the control pediculicide in 59 children (92.2%). The natural remedy was very effective in controlling louse infestations under clinical conditions and caused no serious side effects.

In Southeast Asia, Markus (2002) conducted a study in combating lice with neem oil. Because of their toxicological safety, low production cost, favorable eco-toxicological properties and the ease of cultivating the tree in the tropics (Azadirachta indica) neem preparations are now used across the globe to fight migratory locusts and other insect pests.

A descriptive study was conducted by Baswa et al., (2001) in antibacterial activity of karanj (pongamia pinnata) and neem seed oil. The antibacterial activity of karanj (Pongamia pinnata) and neem (Azadirachta indica) seed oil in vitro against fourteen strains of pathogenic bacteria was assessed. Using the tube dilution technique, it was observed that 57.14 and 21.42% of the pathogens were inhibited at 500 microl/ml; 14.28 and 71.42% at 125 microl/ml; and 28.57 and 7.14% at 250 microl/ml of Karanj and Neem oils, respectively. The activity with both the oils was bactericidal and independent of temperature and energy.

In 2000 Abdel et al., Parasitology and Animal Diseases Department, National Research Center, conducted a study to find out vitro acaricidal effect of plant extract of neem seed oil on egg, immature, and adult stages of pediculosis in Egypt. They have studied the concentrations at 1.6, 3.2, 6.4, and 12.8%. The mortality rates increased with the extract concentrations. Although, it had no significant effect on the moulting rates of fed nymphs, it caused malformation or deformities in 4% of adults moulted. It was concluded that the concentration of Neem Azal F which may be used for commercial control of this tick species were 1.6 and 3.2%.

Summary

This chapter dealt with the review of literature. The data were collected from eight primary sources and seven secondary sources. This review of literature helped to obtain in depth knowledge about prevalence, effects and management of pediculosis.

CHAPTER - III

RESEARCH METHODOLOGY

The methodology of the research study is defined as the way the data are gathered in order to answer the questions to analyze the research problem. It enables the researcher to project a blue print of the research undertaken .The research methodology involves a systematic procedure by which the researcher had a start from the initial identification of the problem to its final conclusion.

The present study is conducted to assess the effectiveness of neem oil upon pediculosis among school children. The chapter deals with a brief description of different steps undertaken by the researcher for the study. It involves research approach, the setting, population, sample and sampling technique, selection of the tool, content validity, reliability, pilot study, data collection procedure and plan for data analysis.

Research approach

Research approach is the most significant part of any research. The appropriate choice of the research approach depends on the purpose of the research study which is undertaken.

According to Polit and Hungler (2008), an experimental research is an extremely applied form of research and involves finding out how well a programme, product, practice or policy is working. Its goal is to assess or evaluate the success of the program. An experimental research is generally applied where the primary objective is to determine the extend to which a given treatment meets the desired results.

To accomplish the objective of this study, an experimental approach was considered most appropriate, since the researcher wanted to assess the effectiveness of neem oil upon pediculosis among school children.

Research Design

According to Polit and Beck (2008), a research design is the overall plan for addressing a research question, including specifications for enhancing the study's integrity.

A true experimental research design was adopted for conducting this study. It fulfills the criteria such as manipulation, control and randomization. Randomization was carried out to select the 60 samples and to assign the control and experimental group. Neem oil was given as manipulation in the experimental group.

In this study pre test- post test design was adopted. The researcher has assessed pediculosis for selected children using degree of pediculosis and signs and symptoms for both control and experimental groups before therapy and the researcher has manipulated the independent variables i.e. by the application of neem oil only to the experimental group of children. The effectiveness of neem oil on dependent variable i.e. the pediculosis was assessed after the therapy. Then the level of satisfaction on neem oil application was assessed using rating scale among the experimental group.

The research design is represented dramatically as follows

R - O1 X O2

R - OI - O2

R - Randomisation

O1 - Pre-test for the assessment of pediculosis among the school children.

X - Intervention-Neem oil application for 30 minutes in twice a week.

O2 - Post test for the assessment of effectiveness of neem oil on pediculosis after seven days.

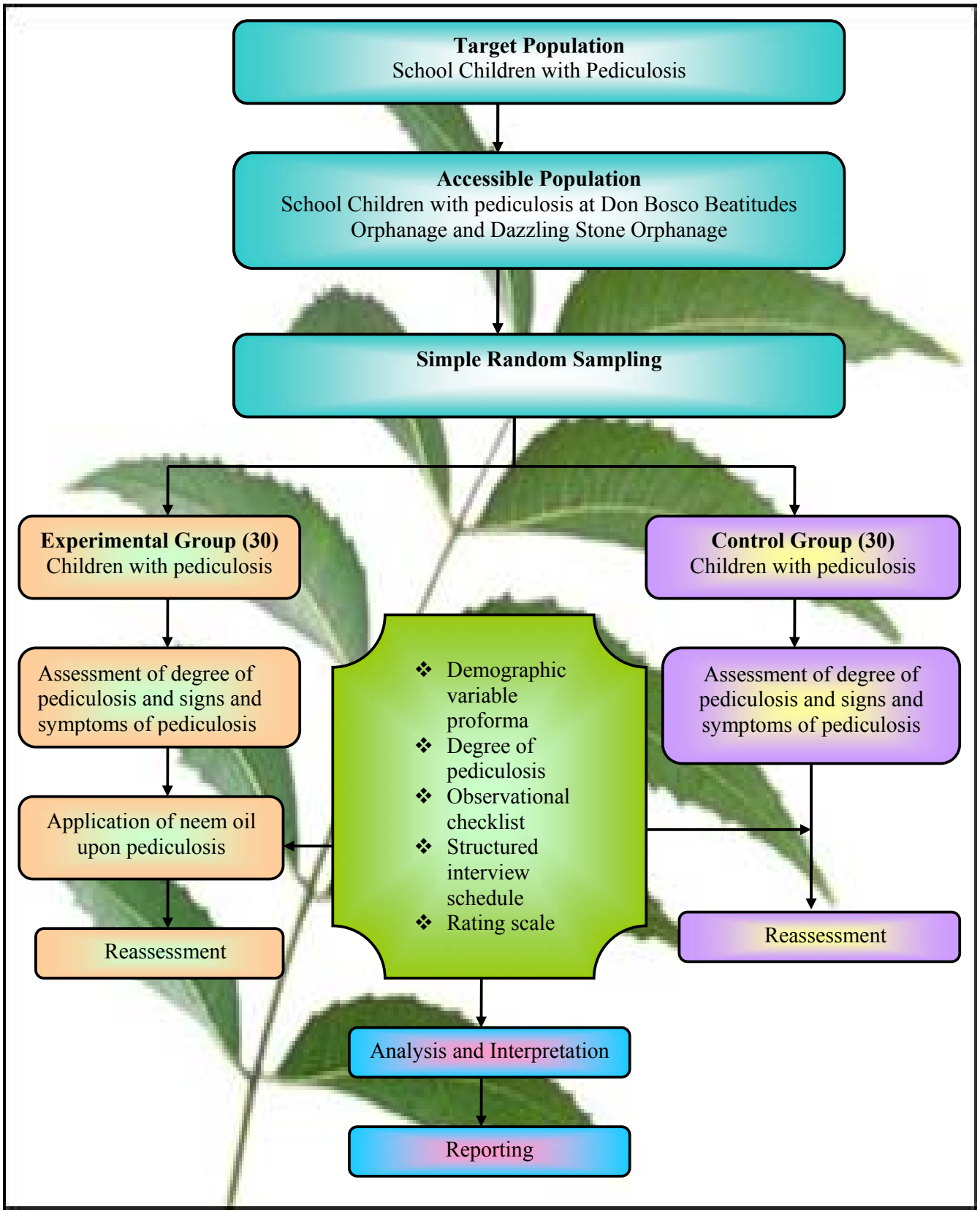

Fig. 2. Schematic Representation of the research design.

Research setting

The physical location and condition in which data collection take place in the study (Polit and Hungler, 2008).

The present study was conducted at selected orphanages in Chennai. The investigator selected two orphanages for the study, Don Bosco Beatitudes Orphanage, Vyasarpady for control group and Dazzling Stone Orphanage in Kundrathur for the experimental group. Both the head of the institution were interested in finding out the pediculosis among school children and showed interest to alleviate the symptoms of pediculosis. These orphanages are managed by different trust.

Population

Population is the entire aggregation of cases which meet designated set of criteria (Polit and Hungler 2008).

The **Target Population** is the group of population that the researcher aims to study and to whom the study finding will be generalized. In this study the target population comprises of all orphan children with pediculosis within the age group of 10 to 15 years.

The **Accessible Population** is the list of population that the researcher finds in the study area. The accessible population in this study was orphan children with pediculosis staying in Don Bosco Beatitudes Orphanage, Vyasarpady and Dazzling Stone Orphanage in Kundrathur within the age group of 10 to 15 years.

Sample

Sample consists of the subset population, selected to participate in a study. (Polit and Beck, 2008). A sample of 60 children with pediculosis in Don Bosco Beatitudes Orphanage, Vyasarpady and Dazzling Stone Orphanage in Kundrathur, were selected for the study out of which 30 children were randomly assigned to control group and 30 children to experimental group.

Sampling Technique

Sampling is the process of selecting a portion of population to represent the entire population (Polit and Hungler, 2008). The subject of the study was selected by simple random sampling technique. From the eligible population 30 children for control group and 30 children for experimental group who were willing to participate in the study were included in the study based on sample selection criteria.

Sampling Criteria

Inclusion criteria

Children who are

- between the age group of 10-15years.
- willing to participate.
- present during the study period.
- having pediculosis.
- living in selected orphanages.
- able to understand Tamil and English.

Exclusion criteria

The study will exclude the children

- below the age group of 10 years.
- who are not willing to participate.
- with no pediculosis

Selection and development of study instruments

As the study aimed to evaluate the effectiveness of neem oil upon pediculosis, the data collection instruments were developed through an extensive review of literature in consultation with the opinion of experts and with the opinion of faculty members. The instruments used in this study are demographic variable proforma, degree of pediculosis, observational checklist on signs and symptoms of pediculosis, structured interview schedule on knowledge regarding the prevention of pediculosis, rating scale on the satisfaction of administration of neem oil.

Demographic variable proforma

This proforma is used to measure the demographic variables such as age, sex, and educational qualification, nativity of the child, length of stay in the orphanage, and length of the hair.

Degree of pediculosis

This degree of pediculosis is used to assess the score before and after neem oil application.

The score is categorized as,

0 (Children with no signs of pediculosis)

0+ (Children with evidence of past infestation)

1(Children with a recent infestation and low probability of active parasitism)

2(Children with a recent infestation and high probability of active parasitism)

3(Children with mobile lice (active pediculosis).

Observational checklist on signs and symptoms of pediculosis

This proforma is used to assess the signs and symptoms of pediculosis with 21 items such as itching sensation in the scalp, small crusts of dried blood around sites where bites have occurred, dandruff, nits on the hair, sleep disturbance due to itching, brittleness of hair, scratching the head vigorously, viable louse on the head, loss of hair, red bumps on child's scalp, scaling, scratch marks, sores from scratching. Skin Infections may occur if the bites are scratched, excoriation, a rash on the trunk (probably due to sensitization), conjunctivitis, fever, social stigma due to pediculosis, scalp pruritus, enlarged tender cervical lymph nodes. This observational item is divided to in three categories of degree of pediculosis according to its severity in affecting the children. The scoring key is given below:

1-7 - (Mild)

8-14 - (Moderate)

15-21 - (Severe)

Rating scale on the level of satisfaction of administration of neem oil

This rating scale consisted of eleven items on the satisfaction of school children regarding neem oil. The subscales were explanation regarding neem oil application,

approach of the researcher, time spent by the researcher, duration of administration, frequency of administration, cost of the therapy, comfortness, easy to use and easy to follow, reduction of pediculosis, less complications. The responses extended from highly satisfied (score -3), satisfied (score-2) to dissatisfied (score -1). The scoring key is given below

< 50 %	-	Dissatisfied
51 – 75%	-	Satisfied
>75 %	-	Highly Satisfied.

Validity

Content validity is the degree to which an instrument measures what it is supposed to measure. Content validity is the sampling adequacy of the content being measured.(Polit and Hungler 2007).

The content validity of the tool was obtained by getting opinion from seven experts. Six experts from the field of nursing and one from the pediatrician Apollo Children Hospital. The validation has suggested some specific modifications in the objectives, hypothesis, and checklist on the signs and symptoms of pediculosis. The modifications and suggestions of experts were incorporated in the final preparation of the tool.

Reliability of the study

Reliability is the degree of consistency with which an instrument measures the attribute which is designed to measure (Polit and Hungler 2007). The reliability of the tool was elicited by using split half technique; Karl Pearson's 'r' was computed for

finding out the reliability. For rating scale on the level of satisfaction after neem oil application 'r' was found to be 0.86 which shows positive correlation and which indicates that the tools were highly reliable. The reliability of translated version in Tamil is established by test retest method and the reliability score was 0.83.

Pilot Study

Polit and Beck (2004) states that a pilot study is a miniature of some parts of actual study in which the instruments are administered to the subjects drawn from the same population. It is a small scale version or trial run domain preparation for a major study. The purpose is to find out the feasibility and practicability of the study design.

The pilot study was conducted on 5 orphan children (experimental) from the Orphanage Balagurukulam and 5 orphan children (control) from Annai Anadai Illam Pudur. These subjects were chosen by simple random sampling 5 in control group and 5 in experimental group. The pediculosis was assessed for both the control and experimental groups with the help of assessment of degree of pediculosis and observational checklist on signs and symptoms of pediculosis. Neem oil has been applied for the experimental group twice a week for three weeks with 30 minutes of duration. After one week, pediculosis was reassessed and level of satisfaction was obtained using the rating scale. On the whole neem oil application was found to be feasible and acceptable.

Intervention Protocol

Neem is considered as the traditional main stay of herbal beauty. It is also a source of medicine for the treatment of more than 100 health problems like diabetes,

malaria, skin rashes and scratches. Neem oil is generally used to reduce pediculosis. It is commercially available in the market and is prepared from the neem seeds which are applied on head based upon the length of hair twice for half an hour during morning time for a period of three weeks among school children.

Data collection procedure

The data collection is the gathering of information needed to address a research problem. The data collection was done for a period of one month ie 1st June to 30th June 2010. The researcher introduced herself and obtained consent from the head of the orphanage to participate the children in the study. An assurance was given regarding confidentiality while the actual data was collected. Researcher collected the data from school children in the orphanage.

The present study was conducted in Don Bosco Beatitudes Orphanage, Vyasarpadi and Dazzling Stone Orphanage; Kundrathur.110 children were screened for pediculosis, of which 95 of them had pediculosis. Through randomization 60 children were selected as study participants from orphanage. 30 children were selected as control group in Don Bosco Beatitudes Orphanage and 30 children were selected for experimental group in Dazzling Stone Orphanage. The subjects were selected by simple random sampling technique. The assigned study was primarily concerned to assess the effectiveness of neem oil application upon pediculosis.

Pretest was assessed for both control and experimental group using degree of pediculosis and signs and symptoms of pediculosis. The neem oil has been applied for the experimental group twice a week for three times with 30 minutes duration. The soap

nuts were immersed in the water on previous night. The next day morning the soap nut water was used to wash the hair. Then the level of satisfaction on neem oil application was assessed using the rating scale for experimental group. After one week, pediculosis was reassessed and level of satisfaction was obtained using the rating scale for experimental group.

Problems faced during data collection

The only problem faced during the study was that neem oil produced unpleasant odour.

Plan for data analysis

Data analysis is the systematic organization and synthesis of research data and testing of null hypotheses by using the obtained data (Polit & Beck, 2004). Analysis and interpretation of data were carried out with descriptive statistics like frequency and percentage and inferential statistics like paired “t” test and chi square.

Summary

This chapter has dealt with the selection of research approach, research design, setting, population, sample, and sampling technique, sampling criteria, selection and development of study instruments, validity and reliability of study instruments, pilot study, data collection procedure, and plan for data analysis.

CHAPTER - IV

ANALYSIS AND INTERPRETATION

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

The data was collected from 60 children diagnosed to have pediculosis, 30 children in the control group from Don Bosco Beatitudes Orphanage, Vyasarpady, and 30 children in the experimental group from Dazzling Stone Orphanage in Kundrathur, were selected to determine the effectiveness of neem oil application upon pediculosis.

The data were analyzed according to the objectives and hypothesis of the study. Analysis of study was compiled after all the data was transferred to the master coding sheet. The investigator used descriptive and inferential statistics for analysis. The data were analyzed, tabulated and interpreted using descriptive and inferential statistics.

Organization of the Findings

The findings of the study were organized and presented under the following headings.

- Prevalence of pediculosis among school children.
- Frequency and percentage distribution of demographic variables in control and experimental groups of school children.

- Frequency and percentage distribution of degree of pediculosis among school children in the orphanage before and after neem oil application in the control and experimental groups.
- Frequency and Percentage Distribution of Signs and Symptoms of pediculosis before and after neem oil application in the control and experimental groups of School children.
- Frequency and percentage distribution of knowledge regarding pediculosis among school children.
- Comparison of Mean and Standard Deviation of degree of pediculosis among school children before and after neem oil application.
- Frequency and Percentage Distribution of level of satisfaction of neem oil application upon pediculosis among school children in experimental group.
- Association between selected demographic variables and signs and symptoms of pediculosis before neem oil application in the control group of school children.
- Association between selected demographic variables and signs and symptoms of pediculosis after neem oil application in the control group of school children.
- Association between selected demographic variables and signs and symptoms of pediculosis before neem oil application in the experimental group of school children.
- Association between selected demographic variables and signs and symptoms of pediculosis after neem oil application in the experimental group of school children.
- Association between the selected demographic variables and level of knowledge regarding pediculosis in the control and experimental groups of school children.

- Item wise frequency and percentage distribution of level of satisfaction of school children on neem oil application for pediculosis.

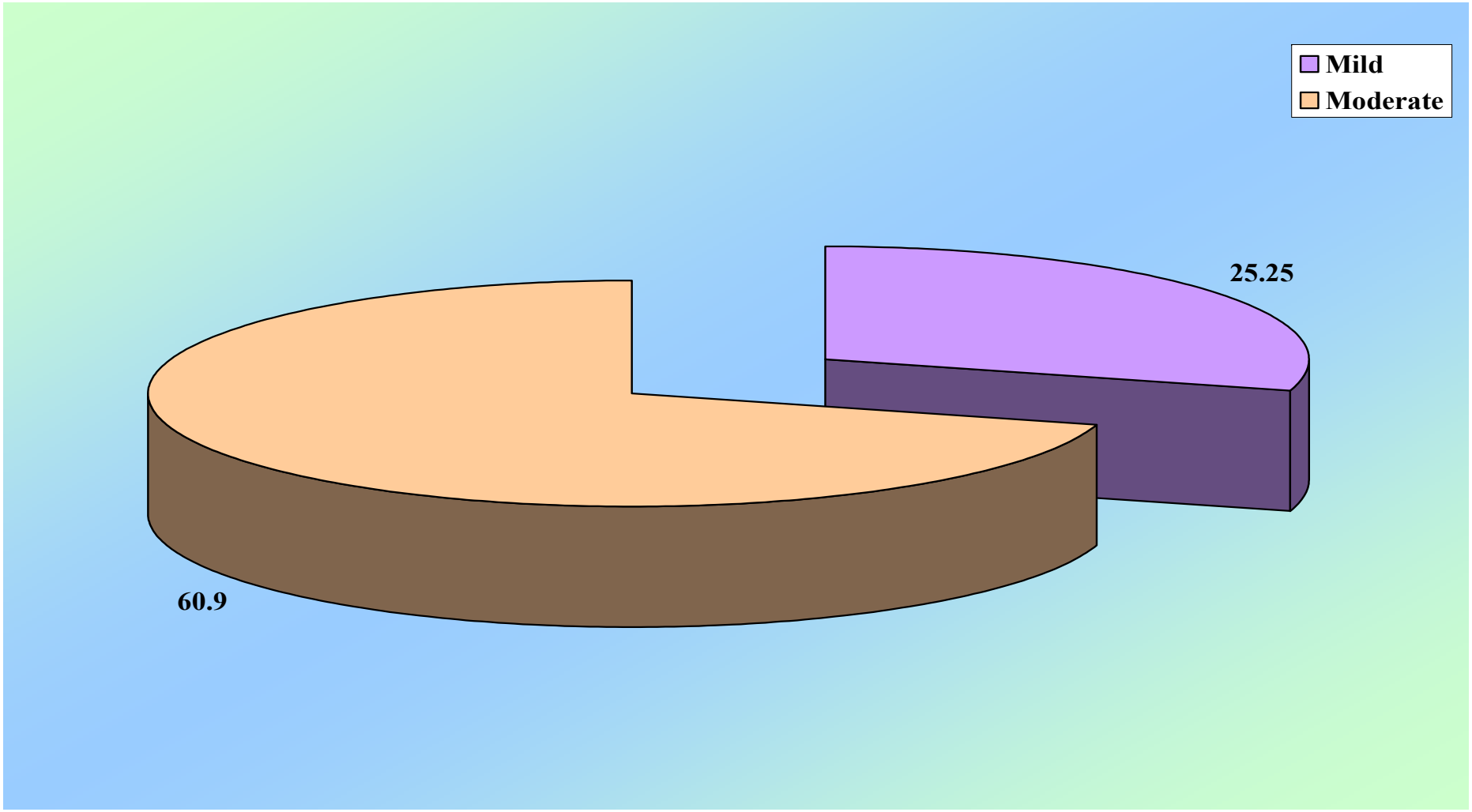

Fig: 3 Percentage distribution of Prevalence of Pediculosis among school children.

Table 1

Frequency and percentage distribution of Demographic Variables in the Control and Experimental groups of School children with pediculosis. (Age, Class of Study, Nativity of the Child, Length of Stay in the Orphanage, Length of the Hair)

(N=60)

Demographic variable	Control group N=30		Experimental group N=30	
	n	p	n	p
Age in years				
10 - 11	9	30	18	60
12 - 13	13	43.3	8	26.7
14 - 15	8	26.7	4	13.3
Nativity of the child				
North India	-	-	-	-
South India	30	100	30	100
Any others	-	-	-	-
Length of the hair				
<5cm	-	-	4	13.3
5-15cm	5	16.7	15	50
>15cm	25	83.3	11	36.7

Table 1 shows that among the demographic variables in the control group a significant percentage of the children were in the age group of 12&13 years (43.3%) and majority of the children have their length of the hair more than >15 cm (80%).

In the experimental group most of the children were in the age group of 10&11 years (60%) and the length of the hair of most of the children was 5-15cm (50%).

Both in the control and experimental groups, 100% of the children are South Indians.

Fig.3 showed that a significant percentage of children were studying in 7^{th} – 8^{th} (43.3%) in the control group whereas majority of the children were studying in 5^{th} -6^{th} (60%) in the experimental group.

Fig.4 showed that most of the children had a length of stay of > 3years in the orphanage (53.3%, 56.7%) in control and experimental groups respectively.

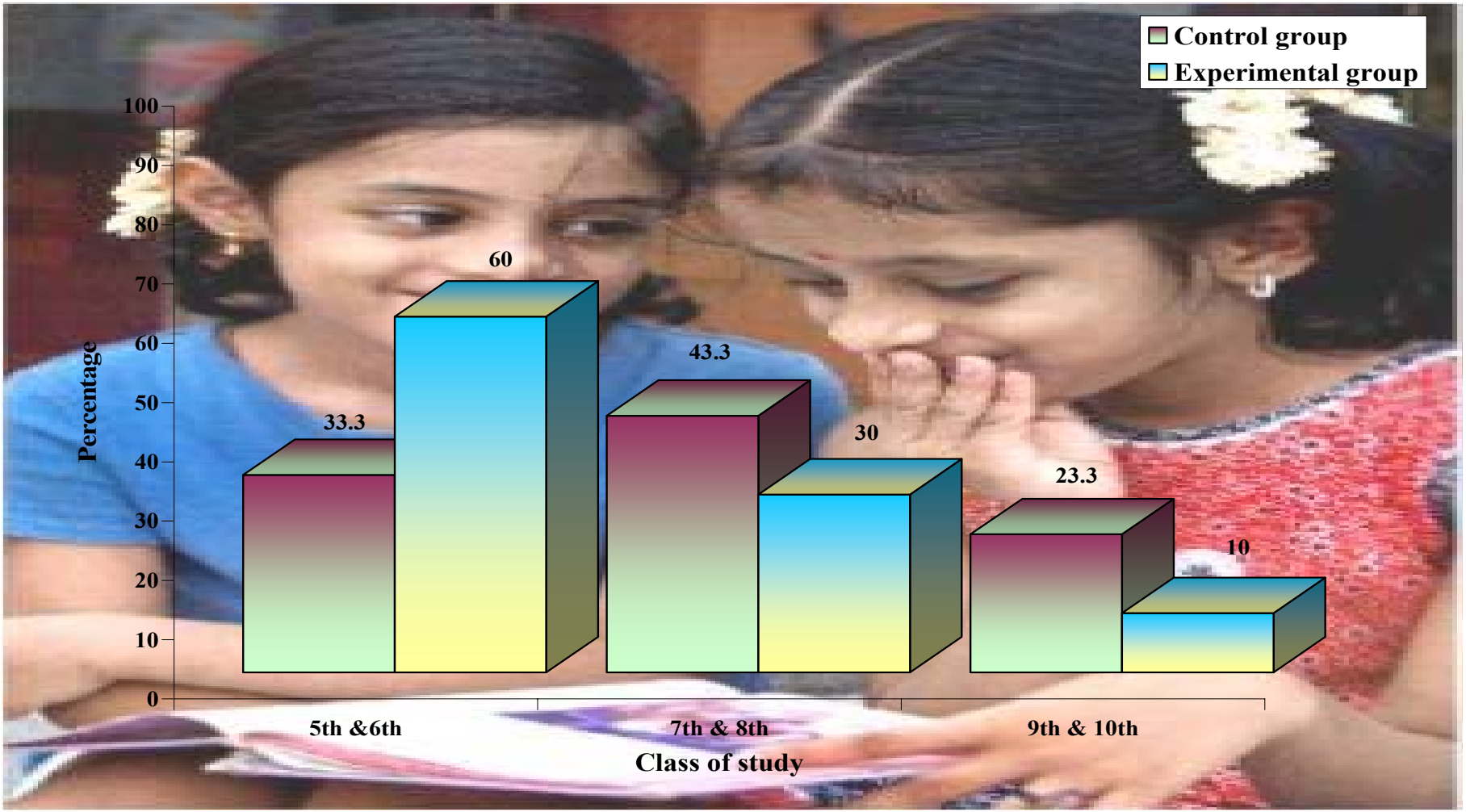

Fig. 4 Percentage distribution of class of study in School children with pediculosis of control and experimental groups.

Fig. 5 Percentage distribution of Length of Stay in Orphanage with pediculosis of control and experimental groups.

Table 2

Frequency and percentage distribution of degree of pediculosis among school children in the orphanage before and after neem oil application in the control and experimental groups.

(N=60)

Degree of pediculosis	Before neem oil application				After neem oil application			
	Control group		Experimental group		Control group		Experimental group	
	n	p	n	p	n	p	n	p
0-(Children with no signs of pediculosis)	-	-	-	-	-	-	5	16.66
0+(Children with evidence of past infestation)	-	-	-	-	-	-	4	13.34
1-(Children with a recent infestation and low probability of active parasitism)	-	-	-	-	-	-	21	70
2-(Children with a recent infestation and high probability of active parasitism)	9	30	8	26.66	8	26.66	-	-
3- Children with mobile lice (active pediculosis).	21	70	22	73.34	22	73.34	-	-

Table 2 shows that most of the children had 3rd degree of pediculosis (70%, 73.34%) (Children with mobile lice) and only a significant percentage of children had 2nd degree of pediculosis (30%, 26.66%) (Children with a recent infestation and high probability of active parasitism) before neem oil application in the control group and experimental group respectively.

Fig 5: shows that most of the children (73.34%) in the control group had 3rd degree of pediculosis (Children with mobile lice) whereas in the experimental group most of the children had 1st degree of pediculosis (Children with a recent infestation and low probability of active parasitism) after neem oil application.

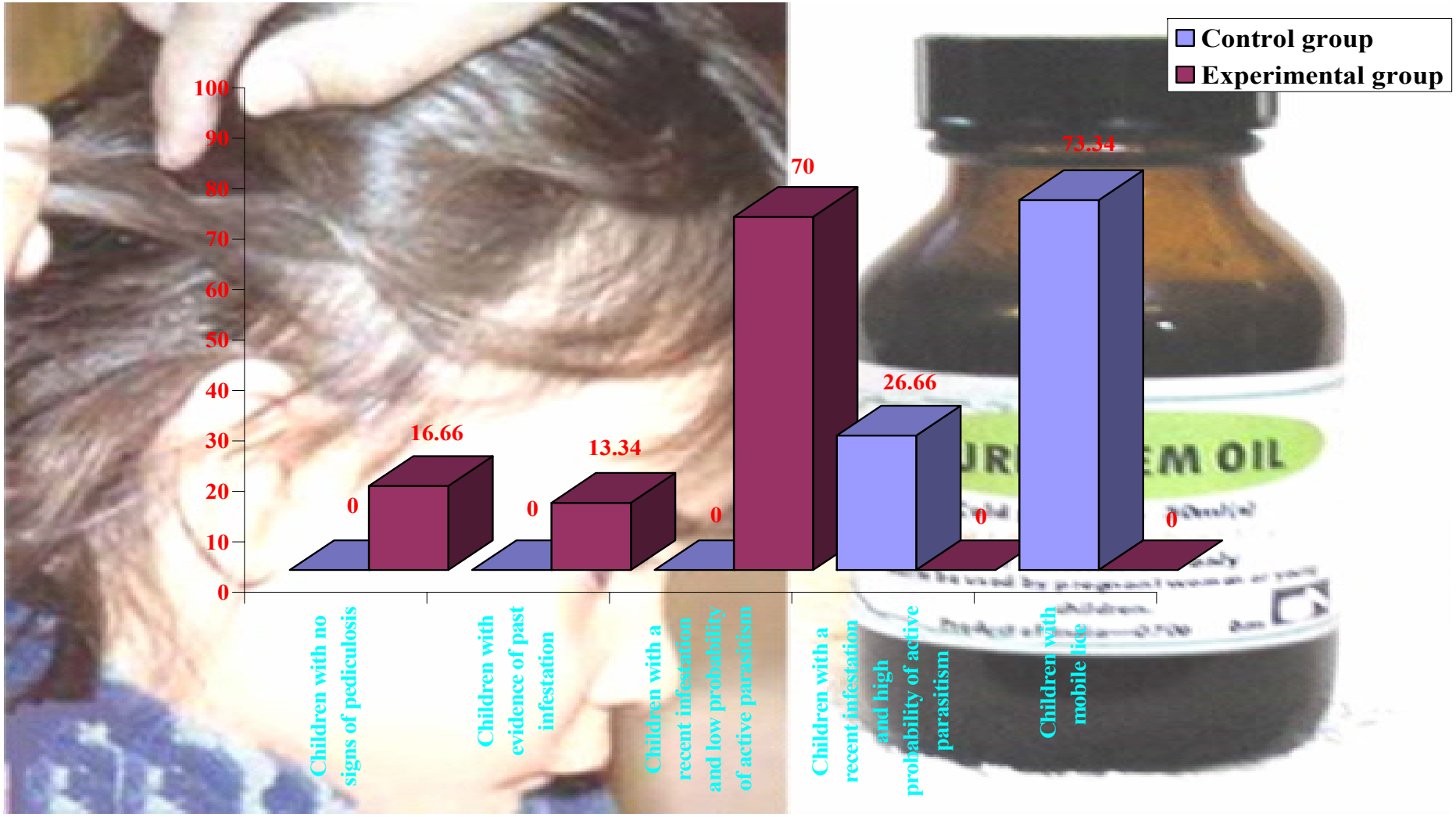

Fig. 6 Percentage distribution of degree of pediculosis in control and experimental groups after neem oil application

Table 3

Frequency and Percentage Distribution of Signs and Symptoms of pediculosis before and after neem oil application in the Control and Experimental groups of School children.

(N=60)

Signs and Symptoms	Before neem oil application		After neem oil application	
	Frequency	Percentage	Frequency	Percentage
	n	p	n	p
Control Group				
Mild	1	3.3	2	6.7
Moderate	29	96.7	28	93.3
Severe	-	-	-	-

It can be noted from table 3 that majority of the children had moderate signs and symptoms (96.7%, 93.3%) respectively in the control group before and after neem oil application.

Fig.6 shows that majority of the children (93.3%) had moderate signs and symptoms before neem oil application whereas majority of the children got mild signs and symptoms after neem oil application in the experimental group.

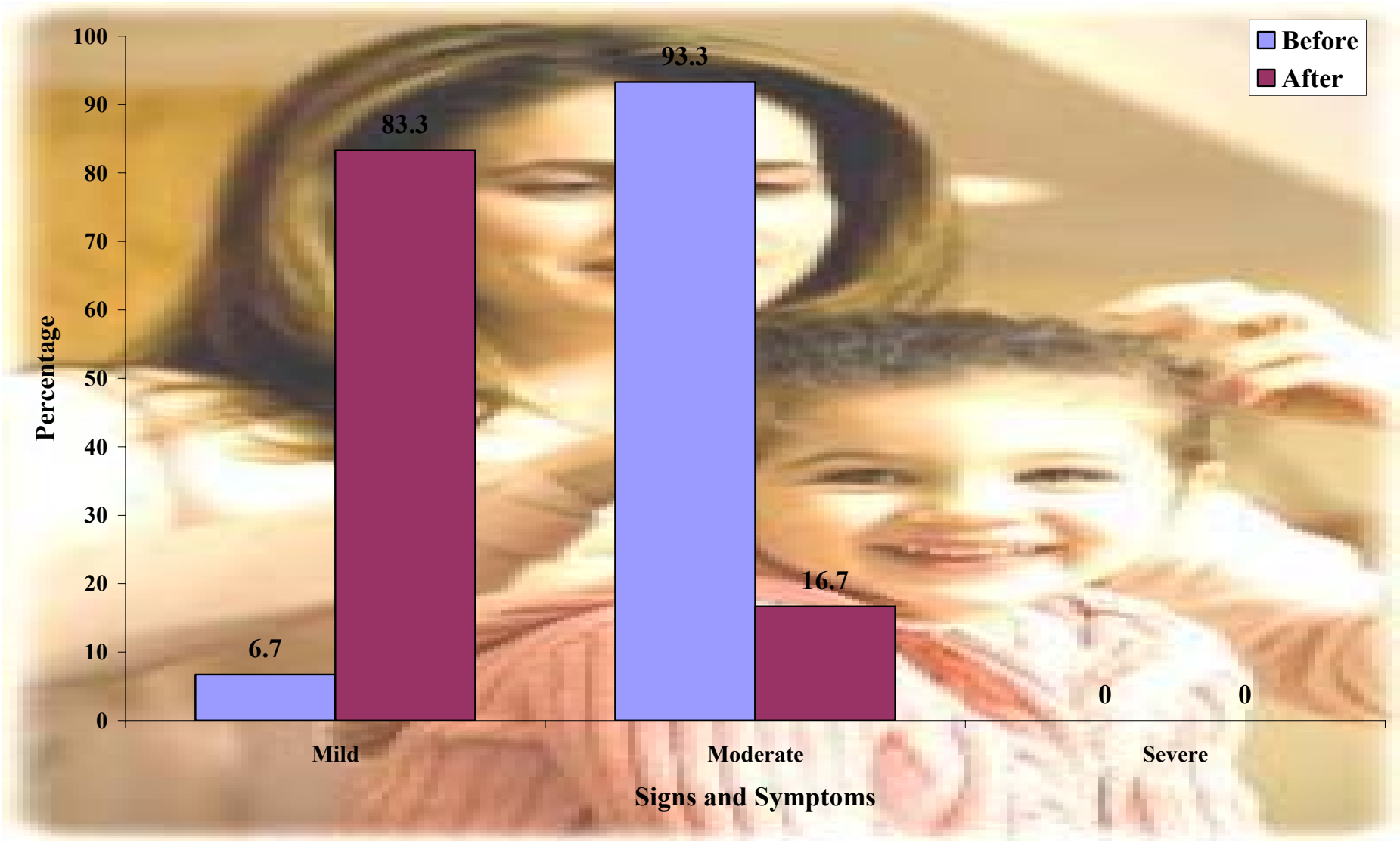

Fig. 7 Percentage distribution of signs and symptoms of pediculosis before and after neem oil application in the experimental group

Table 4

Frequency and percentage distribution of knowledge regarding pediculosis among school children in the control and experimental group.

(N=60)

Level of knowledge	Control group	
	Frequency n	Percentage p
Adequate knowledge	-	-
Moderately adequate knowledge	7	23.33
Inadequate knowledge	23	76.66

It can be noted from the table 4 that a significant percentage of children had moderately adequate knowledge (23.33%) but majority of the children had inadequate knowledge (76.66%) in the control group.

Fig.7 showed that most of the children had inadequate knowledge (63.33%) whereas a significant percentage of the children had moderately adequate knowledge (36.66%) in the experimental group.

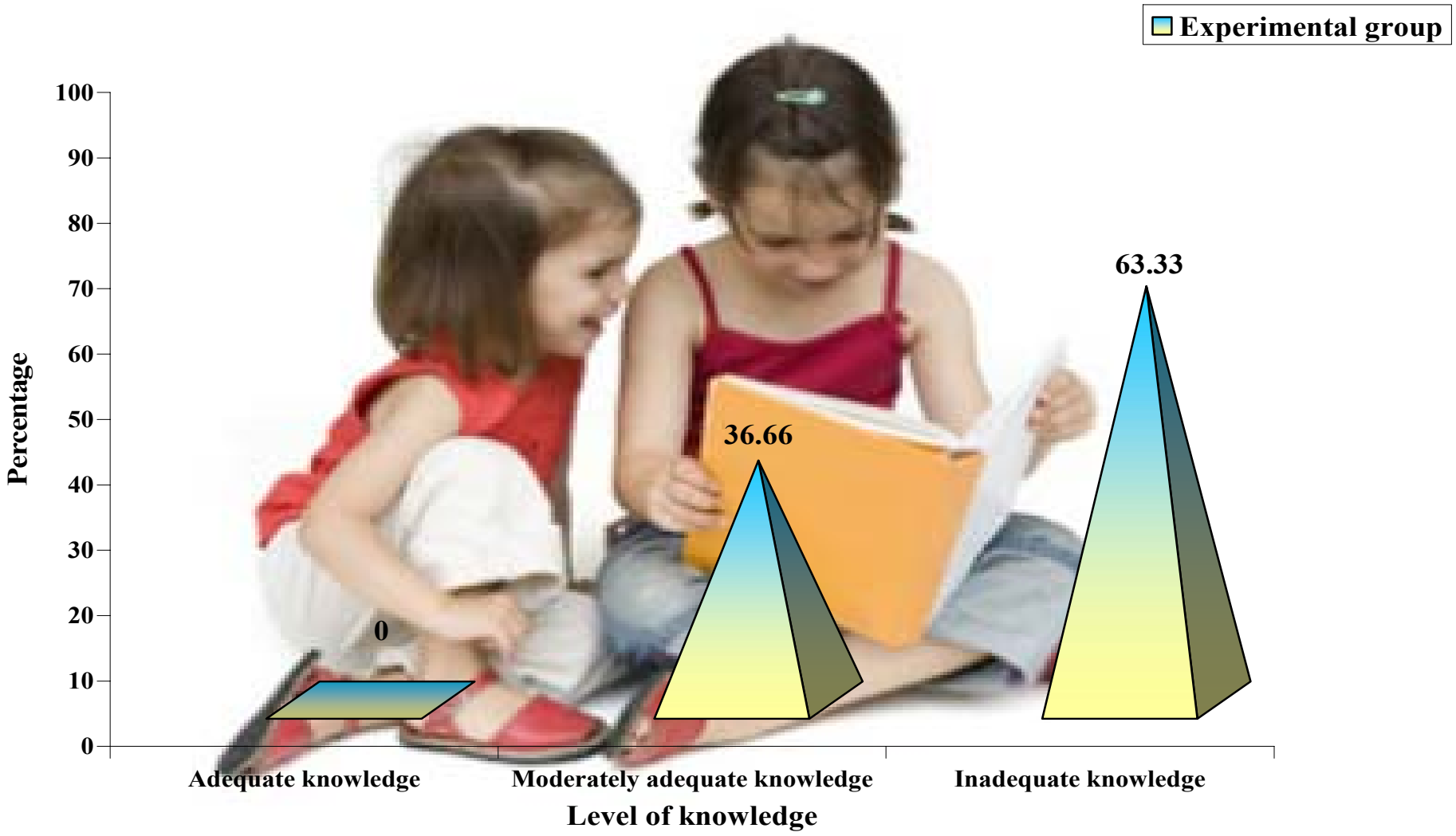

Fig. 8 Percentage distribution of Level of knowledge regarding pediculosis in experimental group

Table 5

Comparison of Mean and Standard deviation of degree of pediculosis among school children before and after neem oil application.

Degree of pediculosis	Mean (M)		Standard Deviation (SD)		't' value
	Control group	Experimental group	Control group	Experimental group	
Pre –test	2.70	2.73	0.466	0.450	0.282
Post test	2.73	0.70	0.450	0.466	17.194

***P<0.001

The table 5 revealed that the degree of pediculosis after neem oil application (M=2.73, SD=.450) in the control group was high in comparison with the degree of pediculosis before neem oil application (M=2.70, SD=.466). The degree of pediculosis after neem oil application (M=.70, SD=.466) in the experimental group was low in comparison with the degree of pediculosis before neem oil application (M=2.73, SD=.450). The difference was found to be statistically significant at p< 0.001 degree of pediculosis and since the 't' value is higher than the table value, it shows the effectiveness of neem oil application.

Table 6

Frequency and percentage distribution of level of satisfaction of neem oil upon pediculosis among school children.

(N=30)

Level of satisfaction	Frequency n	Percentage p
Highly satisfied	22	73.3
Satisfied	8	26.7
Dissatisfied	-	-

The data from table 6 revealed that many of the children were highly satisfied (73.3%) and only a significant percentage of children were satisfied (26.7%) about neem oil application on pediculosis and none of the children said dissatisfied.

Table 7

Association between Selected Demographic Variables and Signs and Symptoms of pediculosis before neem oil application among school children in the control group.

(N=30)

Demographic variable	Mild		Moderate		Severe		
	n	p	n	p	n	p	$\chi 2$
Age in years							
10-11	-	-	9	30			1.353
12-13	1	3.3	12	40			df=2
14-15	-	-	8	26.7			
Class of study							
5th & 6th	-	-	10	33.3			1.353
7th & 8th	-	-	12	40			df=2
9th&10th	1	3.3	7	23.3			
Length of Stay in the Orphanage							
< 1 year	-	-	2	6.7			0.905
1-3 years	-	-	12	40			df=2
> 3 years	1	3.3	15	50			
Length of the Hair							
5-15 cm	-	-	5	6.7			0.207
>15 cm	1	3.3	24	80			df=1

It could be noticed from Table 7 that there was no significant association between the selected demographic variables and signs and symptoms of pediculosis among children before the application of neem oil. Hence the null hypothesis Ho2 was rejected.

Table 8

Association between Selected Demographic Variables and Signs and Symptoms of pediculosis after neem oil application among school children in the control group.

(N=30)

Demographic variable	Mild		Moderate		Severe		χ^2
	n	p	n	p	n	p	
Age in years							
10 - 11	1	3.3	8	26.7			0.879
12 - 13	1	3.3	12	40			df=2
14 - 15	-	-	8	26.7			
Class of Study							
5th &6th	-	-	10	33.3			0.701
7th &8th	1	3.3	12	40			df=2
9th &10th	-	-	7	23.3			
Length of Stay in the Orphanage							
< 1 year	-	-	2	6.7			0.201
1-3 years	-	-	12	40			df=2
> 3 years	1	3.3	15	50			
Length of the Hair							
5-15 cm	-	-	5	6.7			0.429
>15 cm	1	3.3	24	80			df=2

It could be noticed from Table 8 that there was no significant association between the selected demographic variables and signs and symptoms of pediculosis among children after intervention. Hence the null hypothesis Ho2 was rejected.

Table 9

Association between Selected Demographic Variables and Signs and Symptoms of pediculosis before neem oil application among school children in the Experimental group.

(N=30)

Demographic variable	Mild		Moderate		Severe		$\chi 2$
	n	p	n	p	n	p	
Age in years							
10-11	1	3.3	17	56.66			3.33
12-13	1	3.3	7	23.33			df=2
14-15	-	-	4	13.3			
Class of Study							
5th&6th	1	3.3	17	56.66			5.85
7th&8th	1	3.3	8	26.66			df=2
9^{th}&10^{th}	-	-	3	10			
Length of Stay in the Orphanage							
< 1 year	-	-	2	6.7			
1-3 years	1	3.3	10	33.33			1.792
> 3 years	1	3.3	16	53.33			df=2
Length of the Hair							
<5	-	-	4	13.3			3.68
5-15 cm	-	-	15	50			df=2
>15 cm	2	6.6	9	36.7			

It could be noticed from Table 9 that there was no significant association between the selected demographic variables and signs and symptoms of pediculosis before the neem oil application. Hence the null hypothesis Ho2 was rejected.

Table 10

Association between Selected Demographic Variables and Signs and Symptoms of pediculosis after neem oil application among school children in the Experimental group.

(N=30)

Demographic variable	Mild		Moderate		Severe		$\chi 2$
	n	p	n	p	n	p	
Age in years							
10-11	15	50	3	10			0.28
12-13	7	23.3	1	3.3			df=2
14-15	3	7	1	3.3			
Class of Study							
5th&6th	15	50	3	10			0.300
7th&8th	8	26.7	1	3.3			df=2
9^{th}&10^{th}	2	6.7	1	3.3			
Length of Stay in the Orphanage							
< 1 year	2	6.7	-	-			0.430
1-3 years	9	30	2	6.7			df=2
> 3 years	14	46.7	3	10			
Length of the Hair							
<5	4	13.3	-	-			0.938
5-15 cm	12	40	3	10			df=2
>15 cm	9	30	2	6.7			

It could be noticed from Table 10 that there was no significant association between the selected demographic variables and signs and symptoms of pediculosis after the neem oil application. Hence the null hypothesis Ho2 was rejected.

Table 11

Association between the selected demographic variables and level of knowledge regarding pediculosis in the control and experimental group of school children.

(N=60)

Demographic variables	Level of knowledge									
	Control group						Experimental group					
	Inadequate knowledge		Moderately adequate knowledge		Adequate knowledge	$\chi 2$	Inadequate knowledge		Moderately adequate knowledge		Adequate knowledge	$\chi 2$
	n	p	n	p	n p		n	p	n	p	n p	
Age in years												
10-11	8	26.7	1	3.3		9.39	12	40	6	20.0		3.086
12-13	12	40	1	3.3		df=4	6	20	2	6.7		df=2
14-15	3	10	5	16.7			1	3.3	3	10.0		
Class of Study												
5th&6th	8	26.7	2	6.7		6.31	13	43.3	5	16.7		2.010
7th&8th	12	40	1	3.3		df=4	5	16.7	4	13.3		df=2
9^{th}&10^{th}	3	10	4	13.3			1	3.3	2	6.7		
Length of Stay in the Orphanage												
< 1 year	2	6.7	0	0		0.652	1	3.3	1	3.3		0.904
1-3 years	9	30	3	10		df=2	6	20	5	16.7		df=2
> 3 years	12	40	4	13.3			12	40	5	16.7		
Length of the Hair												
<5	-	-	-	-			2	6.7	2	6.7		0.378
5-15 cm	4	13.3	1	3.3		0.037	10	33.3	5	16.7		df=2
>15 cm	19	63.3	6	20.0		df=1	7	23.3	4	13.3		

It can be inferred from table 11 that there was no significant association between selected demographic variables and level of knowledge regarding pediculosis in the control and experimental groups. Hence null hypothesis Ho3 was not accepted.

Table 12

Item wise frequency and percentage distribution of level of satisfaction of school children on neem oil application for pediculosis.

(N=30)

Items	Frequency	Percentage
Explanation regarding neem oil application		
Highly satisfied	27	90
Satisfied	3	10
Dissatisfied	-	-
Approach of the researcher		
Highly satisfied	27	90
Satisfied	3	10
Dissatisfied	-	-
Time spent by the researcher		
Highly satisfied	28	93.3
Satisfied	2	6.7
Dissatisfied	-	-
Duration of administration		
Highly satisfied	17	56.7
Satisfied	13	43.3
Dissatisfied	-	-
Frequency of administration		
Highly satisfied	25	83.3
Satisfied	5	16.7
Dissatisfied	-	-

Cost of the therapy		
Highly satisfied	27	90
Satisfied	3	10
Dissatisfied	-	-
Comfortness		
Highly satisfied	22	73.3
Satisfied	6	20
Dissatisfied	2	6.7
Easy to use		
Highly satisfied	26	86.7
Satisfied	4	13.3
Dissatisfied	-	-
Easy to follow		
Highly satisfied	28	93.3
Satisfied	2	6.7
Dissatisfied	-	-
Reduction of pediculosis		
Highly satisfied	17	56.7
Satisfied	13	43.3
Dissatisfied	-	-
Less complications		
Highly satisfied	28	93.3
Satisfied	2	6.7
Dissatisfied	-	-

The data from Table 12 revealed that majority of the children who attended in this study were highly satisfied with the neem oil application for pediculosis.

Summary

This chapter has dealt with the analysis and interpretation of the data obtained by the researcher. The analysis of the results showed that in the experimental group the degree of pediculosis have reduced after neem oil application when compared to before intervention. This implied that neem oil has the effect on pediculosis.

CHAPTER - V

DISCUSSION

A true experimental study was conducted to determine the effectiveness of neem oil upon pediculosis among school children in orphanages, Chennai.

Objectives of the study were,

- To assess the prevalence of pediculosis among children.
- To determine the effectiveness of neem oil upon pediculosis among children.
- To compare the pre intervention and post intervention status of pediculosis in control and experimental group of children.
- To find out the association between selected demographic variables with the pre and post intervention status of pediculosis in control and experimental groups of children.
- To assess the knowledge of control and experimental group of children regarding pediculosis.
- To identify the level of satisfaction after neem oil application in the experimental group of children.

This study was carried out upon 60 school children at selected orphanages in Chennai. The degree of pediculosis was assessed before and after neem oil application in the control and experimental groups.

The Discussion was Presented as Follows

- Prevalence of pediculosis among school children**.**

- Frequency and percentage distribution of demographic variables, degree of pediculosis, Signs and Symptoms of pediculosis, knowledge regarding pediculosis among school going children in the orphanage in control and experimental groups of school children.
- Comparison of Mean and Standard deviation of degree of pediculosis among school children before and after neem oil application.
- Association between selected demographic variables and signs and symptoms of pediculosis before and after neem oil application both in the control and experimental groups of schoolchildren.
- Association between the selected demographic variables and level of knowledge regarding pediculosis in the control and experimental group of school children.
- Frequency and Percentage Distribution of level of satisfaction of neem oil application upon pediculosis among school children in the experimental group.

Prevalence of pediculosis among school children

As prevalence of pediculosis decreases with age, the present study found the prevalence of pediculosis were presented as mild and moderate (25.25%, 60.90%) respectively. Thus the study proved that the pediculosis prevalence more among the children.

Demographic variables of the school going children with pediculosis

It was found that a significant percentage of the children in the control group were between 12 and 13 years of age (43.3%) and class of study 7^{th} and 8^{th} (43.3%). Most of the children in the experimental group were between 10 and 11 years of age

(60%) and class of study 5th and 6th (60%). This shows that the incidence of pediculosis is high in the age group between 10-13 years and class of study 5th and 8th standard.

The researcher assumed that in these age groups of school children in orphanages, the factors that contribute to pediculosis were unhygienic practices, sleep mingling with other children and sharing of personal items. Pediculosis is quite common in India among school children in orphanages as they don't follow hygienic practices. At this age girls attain menarche and the presence of untreated pediculosis may lead to anemia. Because of pediculosis feeding of blood it leads to anemia and the scratch sites may lead to secondary infection (Slonka et al. 1976).

In Asia, 19% of girls are anemic. In a survey conducted on1997, 12-18 year old girls in rural India were found to be anemia with prevalence rate of 82.9% among girls in school and 92.7% among girls not in school. The findings were consistent with the study findings of Sidoti et al (2000) who conducted a study and inferred that the pediculosis is most commonly seen in the age group of 3-12 years, as the age increases the prevalence of pediculosis decreases, mostly above 15 years. Thus the community health nurse should emphasis on hygienic practices of school children in orphanages.

Most of the children in both control and experimental groups were in the orphanage for more than 3 years (53.3%, 56.7%) and length of hair >15 cm 83.3%, 36.7% respectively. Only a significant percentage of children were staying in the orphanage for 1-3 years (40%, 36.7%) both in the control and experimental groups. The statistics of orphanages reveals that in India 25,700,000 children between 0-17 years are orphans due to all causes. In the orphanages due to low socio economic status and

inadequate facilities, children are not able to maintain hygienic practices. The unavailability of the beds may tend the child to share beds for sleeping and follow practices which causes increases in the prevalence of pediculosis.

Living in an Institutional setting is a risk factor for pediculosis, such as an orphanage. The findings of the present study coincide with the findings of Nicholson et al., (1992) reported that 4/99 (4%) of a group of international adoptee evaluated in their clinic were diagnosed with head lice. This retrospective case done a health screening of 100 international adoptee. Included were the first 100 children who attended the Outpatient Inter-Country Adoption Clinic at the Royal Children's Hospital in Melbourne. The children range in age from 2 months-16 years (median=5 months; mean=2.8 years). The countries most represented were Korea with 36 children and India with 21.

Degree of pediculosis among school children

In the present study the pediculosis is graded based on the degree. It can be graded as 0, 0+, 1, 2 and 3. The findings showed that most of the children had 3rd degree pediculosis (70%, 73.34%) (Children with mobile lice) before neem oil application both in the control and experimental group. After neem oil application most of the children in the experimental group had 1st degree (70%) pediculosis. In the control group children had 3rd degree pediculosis (73.34%).

Botanically name of the Indian Lilac tree is Azadiracta Indica which is commonly known as neem tree and has various advantages such as natural insect repellent, a safe pesticide, a fertilizer, a skin care ingredient and a contraceptive. So

nurses should develop knowledge regarding alternative system of medicine (AYUSH-Ayurveda, Yoga, Unani, Sidha and Homeopathy). At present the government of India is emphasizing on NRHM, which has a component as mainstreaming AYUSH.

A similar study was conducted by Eileen (1991) in America to determine the intensity of Pediculus Capitis Infestation among Argentinean schoolchildren. The study included 1,370 schoolchildren (692 girls, 678 boys) from 26 schools of the province of La Rioja (21 public schools, five private schools). Moreover, five degrees of parasitism were classified: 0) children with no signs of pediculosis; 0+) children with evidence of past infestation; 1) children with a recent infestation and low probability of active parasitism; 2) children with a recent infestation and high probability of active parasitism; 3) children with mobile lice (active pediculosis). The general prevalence was 61.4% (girls: 79%; boys: 44%, $p<0.001$).

Signs and symptoms of pediculosis among school going children in orphanages

Pediculosis is associated with significant signs and symptoms. The most common signs and symptoms associated with pediculosis are dandruff, nits on the hair, brittleness of hair, itching sensation and scratching the head vigorously. Majority of the children had moderate signs and symptoms (96.7%, 93.3) before neem oil application both in the control and experimental groups. Most of the children in the experimental group had mild signs and symptoms (83.3%) after neem oil application whereas in the control group signs and symptoms persist in the same level.

These findings indicate the presence of pediculosis in the children. Pediculosis leads to lack of concentration and it is a social stigma among the children. So they were

motivated to take initiative to prevent pediculosis. The investigator assumed that sleep mingling with other children and unhygienic practices might be the reason for pediculosis in the orphanage children.

Level of knowledge of school going children on pediculosis

Most of the children had inadequate knowledge (76.66%, 63.33%) and significant percentage of the children had moderately adequate knowledge (23.33%, 36.66%) both in control and experimental groups. From these findings the researcher assumed that the children had inadequate knowledge regarding pediculosis due to lesser emphasis on educating children on head hygienic.

This study is in congruence with the study carried out by Khokhar (2001) among primary school children in Delhi. He has reported that out of a total of 940 study subjects studied 156 (16.59%) were found to be infested with head louse. Significantly higher proportions of girls (20.42%) were found to be infested as compared to boys (13.86%). Only 30.38% of those infested were aware of the infestation.

Since head louse infestation is a common problem of school going children both parents and teachers along with the students should be taught how to recognize the infestation. Also School Health Nurse should be responsible for treatment and prevention of louse infestation besides carrying out other school health service functions.

Comparison of Mean and Standard deviation of degree of pediculosis among school going children before and after neem oil application

The study participants were compared with the mean and standard deviation of degree of pediculosis in before and after the neem oil application for pediculosis. In control group, there was no significant difference in degree of pediculosis before the neem oil application (M=2.70, SD=0.450) and after the neem oil application (M=2.73, SD=0.450).

In contrast, in the experimental group, degree of pediculosis (M=0.70, SD=0.466) was decreased when compared to the degree of pediculosis (M=2.73, SD=0.450) before the neem oil application. The difference was found to be statistically significant at $p< 0.001$ degree of pediculosis and it can be attributed to the effectiveness of neem oil application.

The findings showed that neem oil is effective in reducing pediculosis among school going children especially in girls. The use of neem oil will help the nurses to focus on natural remedies for the prevention of pediculosis.

Association between selected Demographic Variables and Signs and Symptoms of pediculosis

In the present study, the investigator found that there was no significant association between the selected demographic variables` like age, class of study, length of stay in the orphanage and length of hair and signs and symptoms of pediculosis of

school going children in control and experimental groups before and after neem oil application. Hence the null hypothesis Ho2 was rejected.

It was found from the study that pediculosis among school children where due to certain conditions like over crowding and poor personal hygiene. It is also clear from the study that the neem oil application can reduce the selected symptoms of pediculosis among all categories of people. Pediculosis may lead to embarrassment in a public place and absenteeism from school and need to spent more money on remedies. Thus it is the responsibility of Community Health Nurse to emphasize the importance of neem oil application and motivate the children for neem oil application.

Association between selected demographic variables and level of knowledge

There was no significant association between the selected demographic variables like age, class of study, length of stay in the orphanage and length of hair and level of knowledge both in the control and experimental groups. Hence the null hypothesis H03 was not accepted.

The study findings were supported by a similar study conducted by Sidoti et al. (2009) a survey on knowledge and perceptions regarding headlice on a sample of teachers and students in primary schools. The study result showed that lack of information leads people to consider this kind of infestation to be associated to low social classes and immigrants. Students receive some short and incomplete information from their parents.

Level of satisfaction of school going children on neem oil application

Being satisfied with the treatment, it carries immense significance in an interventional study. It was observed in the present study on the level of satisfaction of school going children upon neem oil application for pediculosis that most of the children were highly satisfied (73.3%) and only a significant percentage of children were satisfied (26.7%) with the neem oil application. Interventions for head lice infestation must include environmental controls, as well as, direct scalp treatment. The majority of the participants were highly satisfied with researcher approach, administration of neem oil and effectiveness of therapy. This might be the reasons for the high level of satisfaction of the children which was assessed after the application of neem oil.

As the study reveals an increased satisfaction on the effectiveness of neem oil application, this is a promising intervention for the management of pediculosis among school children. This information can be propagated by the Community Health Nurse as neem oil is available at a cheaper cost and carries no side effects unlike most of the curative medicines.

In conclusion, this study has thrown light on a low risk, inexpensive, easily accessible treatment modalities which aimed to decrease the degree of pediculosis and signs and symptoms of pediculosis.

Summary

This chapter has dealt with the discussion of findings in the present study which includes demographic variables, degree of pediculosis, signs and symptoms of pediculosis, level of knowledge of children and its association between demographic variables and signs and symptoms of pediculosis.

CHAPTER - VI

SUMMARY, CONCLUSION, IMPLICATIONS AND RECOMMENDATIONS

The heart of the research findings lies in reporting the findings. This is the most creative and demanding part of the study. This chapter gives a brief account of the present study including the conclusion drawn from the findings, recommendations, limitations of the study, suggestions of the study and nursing implications.

Summary

An experimental study to assess the effectiveness of neem oil upon pediculosis among children at selected orphanages, Chennai".

Objectives of the Study were,

1. To assess the prevalence of pediculosis among children.
2. To determine the effectiveness of neem oil upon pediculosis among children.
3. To compare the pre intervention and post intervention status of pediculosis in control and experimental group of children.
4. To find out the association between selected demographic variables with the pre and post intervention status of pediculosis in control and experimental groups of children.
5. To assess the knowledge of control and experimental group of children regarding pediculosis.

6. To identify the level of satisfaction after neem oil application in the experimental group of children.

The study utilized the true experimental research design and the study was conducted at Don Bosco Beatitudes Orphanage, Vyasarpadi and Dazzling Stone Orphanage, Kundrathur. 60 Children were selected using simple random sampling technique, out of which, 30 children were assigned to control group and 30 children were assigned to experimental group. The degree of pediculosis and signs and symptoms of pediculosis was assessed for both the control and experimental groups in both before and after the neem oil application. Neem oil application was given for the children in the experimental group for twice a week for three weeks with 30 minutes of duration.

Null Hypothesis

Ho1: There will be no significant difference between pre and post intervention status of pediculosis among school children.

Ho2: There will be no significant association between demographic variables and pre and post intervention status of pediculosis among school children.

Ho3: There will be no significant association between demographic variables and knowledge regarding pediculosis.

The conceptual framework of the present study is based on King's Goal Attainment Theory. The study variables; neem oil application and level of symptoms of pediculosis were formulated. An extensive review of literature and guidance by experts formed the foundation to the development of tool.

An experimental approach was used to achieve the objectives of the study. The present study was conducted in Don Bosco Beatitudes, Vyasarpady (control) and Dazzling Stone Orphanage in Kundrathur (experimental). The samples (60) were randomly (simple random sampling) selected and assigned to control (30) and experimental (30) groups.

The investigator used a demographic variable proforma, degree of pediculosis, signs and symptoms of pediculosis, level of knowledge of children regarding pediculosis and level of satisfaction on neem oil application. The data collection tools were validated and reliability was established .After the pilot study, the data for the main study was collected. The collected data was tabulated and analyzed using descriptive and inferential statistics like mean, standard deviation and chi-square.

Major findings of the study

Prevalence of pediculosis

As prevalence of pediculosis decreases with age, the present study found the prevalence of pediculosis were presented as mild and moderate (25.25%, 60.90%) respectively. Thus the study proved that the pediculosis prevalence more among the children.

Demographic variables

A significant percentage of the children in the control group were between 12 and 13 years of age (43.3%) and class of study 7^{th} and 8^{th} (43.3%). Most of the children in the experimental group were between 10 and 11 years of age (60%) and class of study 5^{th} and 6^{th} (60%). Most of the children in both control and experimental groups

were in the orphanage for more than 3 years (53.3%, 56.7%) and length of hair more than 15cm (83.3%, 36.7%) respectively. Only a significant percentage of children were staying in the orphanage for 1-3 years (40%, 36.7%) both in the control and experimental groups.

Degree of pediculosis

Most of the children both in the control and experimental groups had 3rd degree of pediculosis (70%, 73.34%) (children with mobile lice) before neem oil application. After neem oil application most of the children in the control group had 3rd degree of pediculosis (73.3%) whereas in the experimental group had 1st degree (70%) of pediculosis.

Signs and symptoms of pediculosis

Majority of the children had moderate signs and symptoms (96.7%, 93.3) before the neem oil application both in the control and experimental groups. Most of the children in the experimental group had mild signs and symptoms (83.3%) after neem oil application whereas in the control group signs and symptoms persisted in the same level.

Level of knowledge

Most of the children had inadequate knowledge (76.66%, 63.33%) and significant percentage of the children had moderately adequate knowledge (23.33%, 36.66%) both in the control and experimental groups.

Comparison of mean and standard deviation of degree of pediculosis

In control group, there was no significant difference in the degree of pediculosis before neem oil application (M=2.70, SD=0.450) and after neem oil application (M=2.73, SD=0.450).

In contrast, in the experimental group, degree of pediculosis decreased (M=0.70, SD=0.466) compared to the degree of pediculosis before the neem oil application (M=2.73, SD=0.450). The difference was found to be statistically significant at $p<0.001$ degree of pediculosis and it can be attributed to the effectiveness of neem oil application.

Association between selected demographic variables and signs and symptoms of pediculosis

There was no significant association between the selected demographic variables like age, class of study, length of stay in the orphanage and length of hair and signs and symptoms of pediculosis of school children before and after the neem oil application both in the control and experimental groups. Hence the null hypothesis Ho2 was rejected.

Association between selected demographic variables and level of knowledge

There was no significant association between the selected demographic variables like age, class of study, length of stay in the orphanage and length of hair and level of knowledge both in the control and experimental groups. Hence the null hypothesis Ho3 was rejected.

Level of satisfaction

Most of the children were highly satisfied (73.3%) and only a significant percentage of children were satisfied (26.7%) with the neem oil application in the experimental group.

Conclusion

The findings of the study indicate that the pediculosis is a major health problem faced by the school children which need a non-pharmacological healing approach. Application of neem oil is simple and easy to implement, easily available, no notable side effects and most acceptable to reduce the degree of pediculosis among school children. The excavated results supported that the incorporation of neem oil application among school children is the best intervention to treat pediculosis.

Implications

The finding of the study has the following implications in the areas of nursing service, nursing education, nursing administration and nursing research. By assessing the effectiveness of neem oil, we get a clear picture regarding different steps to be taken in all these fields, to improve the standards of nursing profession.

Nursing Service

In the earlier period the experimental studies on pediculosis was very less. At present there is increased prevalence, which needs much more attention from the government and private sectors. Pediculosis is more among the school children. School

children in the orphanage perceive signs and symptoms of pediculosis with less attention and also reluctant to go for treatment of pediculosis. Nurses are the key persons working in the community and schools, where she has close contact with the children. She should educate the children and the care takers about the signs and symptoms and complication of pediculosis. She should educate the children and the care takers on to get relieved of pediculosis through the neem oil application which could prevent further complications. Mandatory screening for pediculosis could be practiced among the school children.

Nursing Education

Nursing students have to be trained and should gain the knowledge based on research evidence. The present trend being cost effective care, in community neem is easily available and cheap. The students are the future community health nurses who will teach the community on the best practices of prevention of pediculosis.

Nursing Administration

With technological advances and ever-growing challenges of health care needs, the administrators have a responsibility to provide nurses with substantive continuing education opportunities. This will enable the nurses to update their knowledge, acquire special skills to demonstrate high quality care. Nursing administrators should take the initiative in organizing educational programs on integrated system of medicine for the nurses on the easiest and economic way to relieve the symptoms of pediculosis.

Nurse administrators should collaborate with governing bodies in formulating policies and protocols to emphasize nursing care of school children with the use of home management measures to relieve the symptoms. She should take initiative in conducting the screening programme to assess pediculosis among the school children in the orphanage.

Nursing research

There is a need for extensive and intensive research in this area. It opens a big avenue for innovative methods of pediculosis management, focus on patient interest in quality and cost effectiveness, so as to generate more scientific data base in order to manage pediculosis. Disseminate the findings of the research through conferences; seminars and by publishing in nursing journals there by promoting effective utilization of research findings in the management of children with pediculosis. Further research is needed to link the use of neem oil for pediculosis with associated symptoms in various groups of children and in different settings.

Recommendations

- A similar study could be undertaken on a large scale for a more valid generalization.
- The study could be replicated in different settings and with different population.
- A comparative study could be conducted to test the effectiveness of neem oil and combing the hair upon pediculosis.
- A similar study can be conducted with coconut oil.

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APPENDIX - A

LETTER SEEKING PERMISSION TO CONDUCT THE STUDY

Apollo College of Nursing
(Recognised by the Indian Nursing Council and Affiliated to the Tamil Nadu Dr. M.G.R. Medical University, Chennai)

CO/0884/10 **21.04.10**

To

Respected Sir / Madam,

Sub.: To request permission for research study – Reg.

Greetings! As part of the curriculum requirement our 2nd year M. Sc. (N) student **Ms.Lincy Issac** has selected the following title for her research study.

"An experimental study to assess the effectiveness of Neem Oil upon pediculosis among school children in selected Orphanages, Chennai".

So I kindly request your goodselves to permit her to use the resource materials for the above-mentioned candidate.

Thanking You,

Dr. LATHA VENKATESAN
PRINCIPAL

Vanagaram to Ambattur Main Road, Ayanambakkam, Chennai - 600 095.
Ph. : 044 - 2653 4387 Tele fax : 044 - 2653 4923 / 044- 2653 4386

APPENDIX -B

SINCE 1966
BEATITUDES SOCIAL WELFARE CENTRE
Post Bag - 2681, 50 Sundaram Street, Vyasarpadi, Chennai - 600 039. India. Phone: Off: 044-25514287, 25514292
Fax: + 91-44-25511171 E-mails: director@dbbeatitudes.org - beatitudes@donboscochennai.org - www.dbbeatitudes.org
1995 Winner of the National Award for the welfare of the handicapped 1998 Winner of the State Award for the welfare of the disabled.

PERMISSION LETTER FOR CONDUCTING THE STUDY

Date: 05.06.2010

To:

Ms. Lincy Issac,
Msc.,(Nsg) II yr student,
Apollo College of Nursing,
Ayanambakkam,
Chennai -600 095

Dear Lincy Issac,

As per your Letter, received from Apollo College of Nursing, we permit you to do the project from 05.06.2010 to 30.06.2010 in our Don Bosco Beatitudes, Vyasarpadi, Chennai -600 039.

Thanking you,

Yours Faithfully,

DON BOSCO BEATITUDES
50, Sundaram Street
Vyasarpadi,
Madras (Chennai) 600 039
INDIA.

DONBOSCO HELP
BEATITUDES
Helps • Encourages • Liberates • People

DONATIONS to: "BEATITUDES SOCIAL WELFARE CENTRE" are eligible for tax relief in full under section 80G
"DIT (E) No.212 (148) / 74". Registered as Beatitudes Social Welfare Centre 133/66, 29.07.1966 under the Societies Registration Act XXI (1860)
BEATITUDES SOCIAL WELFARE CENTRE DEPENDS ON YOUR HELP AND LEGACIES

Dazzling Stone Home for Children

(Income tax exempted under 80 G Act)
Sirukalatur, Chennai - 600 069.
SOUTH INDIA.

Cell 9444273518 Tel: 24780031

PERMISSION LETTER FOR CONDUCTING THE STUDY

04.06.2010

To

Ms.Lincy Issac,
Msc.,(Nsg) II year student,
Apollo college of Nursing,
Ayanambakkam,
Chennai-95.

Dear Lincy Issac,

As per your letter ,received from Apollo college of Nursing ,We permit you to do the project from 05.06.2010 to 30.06.2010 in our Dazzlingstone orphanage, Kundrathur,Chennai-69.

Yours faithfully,

J.Deva Dhas-President,
Dazzlingstone orphanage.

DAZZLING STONE HOME FOR CHILDREN
SARASWATHY NAGAR
SIRUKALATHUR
CHENNAI - 69
Date:

APPENDIX – C

ETHICS COMMITTEE LETTER

Ethics Committee

Apollo HOSPITALS
TOUCHING LIVES

14 July, 2010

To,
Ms. Lincy Issac
Final Year M.Sc (Nursing)
Apollo College of Nursing, Chennai
Tamil Nadu, India

Ref: An experimental study to assess the effectiveness of neem oil upon pediculosis among school children at selected orphanages, Chennai.

Sub: Your letter dated 06 July 2010 for approval of the above referenced project and its related documents

Dear Ms. Lincy Issac,

Ethics committee – Apollo Hospitals has received the following document submitted by you related to the conduct of the above – referenced study.

- Project Proposal titled "An experimental study to assess the effectiveness of neem oil upon pediculosis among school children at selected orphanages, Chennai."
- Study Proforma

Ethics Committee Apollo Hospitals reviewed and discussed the above-mentioned documents presented by you related to the conduct of above-referenced study at its meeting held on 13 July, 2010.

The following Ethics Committee members were present at the meeting held on 13 July, 2010

Name	Profession	Position in the committee
Mr. S. S. Narayanan	Ethicist	Chairman
Dr. Radha Rajagopalan	Clinician	Vice – Chairman
Ms. Jayanthi Swaminathan	Clinical Project Manager	Member Secretary
Dr. V. Balaji	Clinician	EC-Member
Dr. C. Paul Dilip Kumar	Clinician	EC-Member
Dr. K. C. Krishnakumar	Clinician	EC-Member

Apollo Hospitals Enterprise Limited
21, Greams Lane, Off Greams Road, Chennai – 600 006
Tel: 91 – 44 - 2829 3333 Extn: 6008, 91 – 44 - 2829 4439 Extn: 6639 Fax: 91 – 44 – 28294449
E - Mail: ecapollochennai@gmail.com

Ethics Committee

Name	Profession	Position in the committee
Dr. Clive Fernandes	Consultant Clinical Pharmacologist	Basic Medical Scientist
Ms. Maimoona Badsha	Lawyer	Lawyer
Mrs. Chandra Jebaseelan	Nursing Superintendent	EC-Member
Dr. P. Nalini Rao	Social Worker	EC-Member
Miss. N. Suseela	Retired English Teacher	Layperson

After due ethical and scientific consideration, the Ethics Committee has approved the above presentation submitted by you.

The Ethics Committee is constituted and works as per ICH-GCP, ICMR and revised Schedule Y guidelines.

Yours sincerely,

Radhakrishnan

Date 14/7/10

Dr. Radha Rajagopalan
Ethics Committee – Vice Chairman
Apollo Hospitals, Chennai

DR. RADHA RAJAGOPALAN
Vice Chairman
Ethics Committee
Apollo Hospitals Enterprise Limited
Chennai-600 006. Tamil Nadu.

Apollo Hospitals Enterprise Limited
21, Greams Lane, Off Greams Road, Chennai – 600 006
Tel: 91 – 44 - 2829 3333 Extn: 6008, 91 – 44 - 2829 4439 Extn: 6639 Fax: 91 – 44 – 28294449
E - Mail: ecapollochennai@gmail.com

APPENDIX – D

Plagiarism Detector - Originality Report

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This report is generated by the unregistered Plagiarism Detector Demo version!

- 600 initial words analysis only
- partial plagiarism detection
- some important results are excluded
- no external file processing

Register the software - get the complete functionality!

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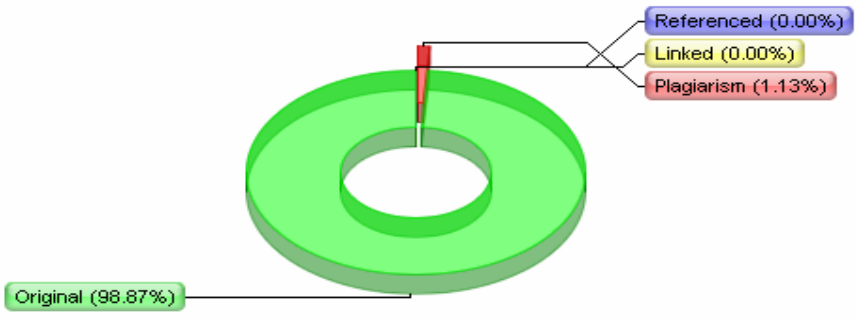


Referenced 0% / Linked 0%

Original - 99% / 1% - Plagiarism

APPENDIX - E

LETTER SEKING PERMISSION FOR CONTENT VALIDITY

From

Lincy Issac

M.Sc.Nursing II year,

Apollo College of Nursing,

Chennai -95

To

Through Proper channel,

Prof.Latha Venkatesan

Principal,

Apollo College of Nursing.

Respected Madam,

Sub: Request for opinions and suggestions of experts for establishing content validity for Research Tool.

Greetings! As a part of the curriculum requirement the following research title is selected for the study.

"An experimental study to assess the effectiveness of neem oil upon pediculosis among school children at selected orphanages, Chennai".

I will be highly privileged to have your valuable suggestions with regard to the establishment of content validity of Research Tool. So I request you to validate my research tool and give suggestions about the tool.

Thanking You,

Place: Yours sincerely

Date: (Ms.Lincy Issac)

APPENDIX – F

CONTENT VALIDITY CERTIFICATE

I here by certify that I have validated the research tool of Ms.Lincy Issac, M.Sc (Nursing) student who is undertaking research study.

"An experimental study to assess the effectiveness of neem oil upon pediculosis among school children at selected orphanages, Chennai".

Signature of Expert

Name and Designation

APPENDIX - G

LIST OF EXPERTS

1. Latha Venketesan

M.Sc, (N), M.Phil., Ph.D

Principal,

Apollo College of Nursing

Chennai-600 095

2. Dr.Mathrubootham Sridhar,

MRCP ch (UK),

Consultant –Pediatrician,

Apollo Childrens Hospital,

Chennai -600 006

3. Prof. Helen M.Perdita,

M.Sc, (N), M.Phil.,

Vice Principal cum Professor (child health Nursing)

Apollo College of Nursing,

Chennai -600 095

4. Prof. Lizy sonia

Vice Principal cum Professor (Medical Surgical Nursing)

Apollo College of Nursing,

Chennai -600 095

5. Ms. Celina D

M.Sc, (N).,

Vice Principal Omayal Achi College of Nursing,

Chennai.

6. Mrs Anitha Babu

Principal,

Rajeshwari College of Nursing,

Chennai.

7. Mrs Kanimozhi

M.Sc, (N),

Associate Professor

Maternal and Child Health Nursing Dept.,

Apollo College of Nursing,

Chennai.

APPENDIX – H

RESEARCH PARTICIPANT CONSENT FORM

Dear Chairperson,

I am a M.Sc., (Nursing) student at Apollo College of Nursing, Chennai.

As a part of my study a research on "Effectiveness of neem oil upon pediculosis among school children" is selected to be conducted. The findings of the study will be helpful in designing the intervention for children.

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

(Signature of the investigator)

I……. hereby give my consent part to participate the children in the study.

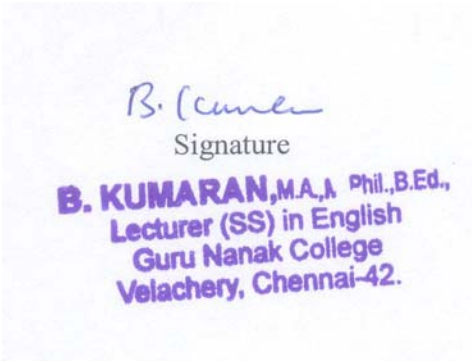
(Signature of the head of the Orphanage)

APPENDIX - I

CERTIFICATE FOR ENGLISH EDITING

TO WHOMSOEVER IT MAY CONCERN

This is to certify that the dissertation **"An experimental study to assess the effectiveness of neem oil upon pediculosis among school children in selected orphanages ,Chennai",** by **Ms. LINCY ISSAC**, II year M.Sc., (N), Apollo College of Nursing, was edited for English Language appropriateness.

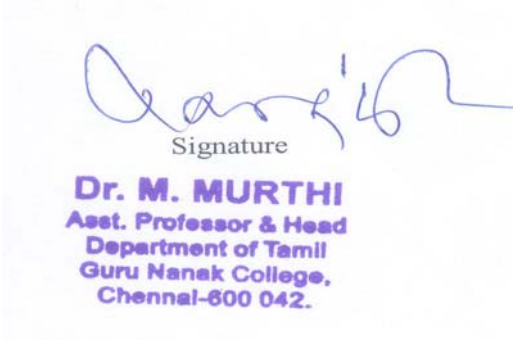


APPENDIX - J

CERTIFICATE FOR TAMIL EDITING

TO WHOMSOEVER IT MAY CONCERN

This is to certify that the dissertation **"An experimental study to assess the effectiveness of neem oil upon pediculosis among school children in selected orphanages ,Chennai",** by **Ms. LINCY ISSAC**, II year M.Sc, (N)., Apollo College of Nursing was edited for Tamil Language appropriateness.



APPENDIX - K

DEMOGRAPHIC VARIABLE PROFORMA

Purpose

This proforma is used by the researcher to collect the information on demographic variables such as age, class of study, nativity of the child, length of stay in the orphanage, length of the hair.

Instruction

Please answer the following questions. Be frank and free in answering these questions. The information filled in by the researcher and the collected information will be kept in confidential and anonymity will be maintained.

1. Sample number ☐

2. Age in years

2.1.10-11 ☐

2.2.12-13 ☐

2.3.14-15 ☐

3. Class of study

3.1. 5^{th}&6^{th} ☐

3.2.7^{th}&8^{th} ☐

3.3.9^{th}&10^{th} ☐

4. Nativity of the child

4.1. North India ☐

4.2. South India ☐

4.3. Any others ☐

5. Length of stay in the orphanage

5.1. <1 year ☐

5.2. 1-3 years ☐

5.3. > 3 years ☐

6. Length of the hair

6.1. <5 cm ☐

6.2. 5-15 ☐

6.3. >15 ☐

சமூக குடும்ப விவரங்களை அறிய உதவும் படிவம்

நோக்கம்:

இந்த படிவம் குழந்தைகளின் வயது, கல்வித்தகுதி, குழந்தைகளின் சொந்த ஊர், பூர்வீகம், குழந்தை அனாதை விடுதியில் தங்கிய காலம், ஆகியவற்றின் அடிப்படையில் குடும்ப விவரங்களை அறிய உதவுகிறது.

வழிமுறைகள்

கீழ்கண்ட கேள்விகளுக்கு சுயமாகவும், தெளிவாகவும் விடையளிக்கவும். இத்தகவல்கள் ரகசியமாக வைக்கப்படுவதோடு மட்டுமல்லாமல் பெயர் தெரிவிக்கப்படாமல் பாதுகாக்கப்படும்.

1. மாதிரி எண்

2. வயது ஆண்டுகளில்

2.1 10-11 ☐

2.2 12-13 ☐

2.3 14-15 ☐

3. கல்வித் தகுதி

3.1 5 முதல் - 6வது வகுப்பு ☐

3.2 7 முதல் - 8வது வகுப்பு ☐

3.3 9 முதல் - 10வது வகுப்பு ☐

4. குழந்தை வசிக்கும் இடம்

4.1 வட இந்தியா ☐

4.2 தென் இந்தியா ☐

4.3 பிற இடங்கள் ☐

5. அனாதை விடுதியில் தங்கிய காலம்

5.1 < 1 வருடம் ☐

5.2 1-3 வருடங்கள் ☐

5.3 > 3 வருடங்கள் ☐

6. முடியின் நீளம்

6.1 < 5 செ.மீ ☐

6.2 5 – 15 செ.மீ ☐

6.3 >15 செ.மீ ☐

APPENDIX L

DEGREE OF PEDICULOSIS

Purpose

To assess the degree of pediculosis.

Instruction

The instructor will observe and give the degree. The information collected will be kept confidential and anonymity will be maintained.

Score	Inference	Signs and Symptoms
0	Children with no signs of pediculosis	No pediculosis
0+	Children with evidence of past infestation	They only showed nits more than 1 cm of the scalp (Dead nits)
1	Children with a recent infestation and low probability of active parasitism	They showed upto 10 nits less than 1 cm from the scalp.
2	Children with a recent infestation and high probability of active parasitism	They showed more than 10 nits less than 1 cm from the scalp, with no mobile lice observed.
3	Children with mobile lice (active pediculosis)	Mobile lice and nits close to the scalp were observed.

Remarks:-

பேன் தொல்லையின் கணிப்பு பட்டியல் படிவம்

நோக்கம்:

பேன் தொல்லையின் நிலையை மதிப்பீடு செய்ய உதவுகிறது.

அறிவுரை:

அறிவுரை புகட்டுவோர் இதன் நிலையை குறித்து உங்களுக்குத் தகவல்கள் அளிப்பார். இத்தகவல்கள் ரகசியமாக வைக்கப்படுவதோடு பெயர் தெரிவிக்கப்படாமல் பாதுகாக்கப்படும் மட்டுமல்லாமல்.

கணிப்பு	விளக்கம்	அடையாளமும் அறிகுறியும்
O	தலையில் பேன் அறிகுறி இல்லாத குழந்தைகள்	பேன் இல்லாமை
O^+	இதற்கு முன்னாள் பேன் தொல்லையின் அறிகுறி உள்ள குழந்தைகள்	தலையின் தோல் பகுதியல் 1செ.மீ மேலாக ஈருகள் கண்பட்டன
1	அண்மை காலத்தில் பேன் தொல்லை உள்ள குழந்தைகளும், குறைந்த வாய்ப்புள்ள செயல்படும் திறன்பெற்ற ஒட்டுண்ணி தன்மை.	இந்த குழந்தைகளின் தலையின் தோல் பகுதியில் 1செ.மீ குறைவான இடத்தில் 10 ஈருகள் காணப்பட்டன.
2.	அண்மை காலத்திய பேன் தொல்லை உள்ள குழந்தைகளும், அதிக வாய்புடன் செய்ல்படும் திறன்பெற்ற ஒட்டுண்ணியின் தன்மை.	இந்த குழந்தைகளின் தலையின் தோல் பகுதியில் 1செ.மீ குறைவான இடத்தில் 10த்திற்கு மேற்பட்ட ஈருகள் தென்பட்டன. ஆனால் ஊர்ந்து செல்ல கூடிய பேன்களை காணவில்லை.
3.	ஊர்ந்து செல்லக்கூடிய தன்மையுள்ள பேன்கள் உள்ள குழந்தைகள் (செயல்படும் திறனுள்ள தலையின் பேன்கள்)	நகரக்கூடிய பேன்களும் ஈருகளும் தலையின் தோல் பகுதியில் காணப்பட்டன.

தீர்வு:

APPENDIX - M

BLUE PRINT ON SIGNS AND SYMPTOMS OF PEDICULOSIS

S.No	Content	Items	Total items	Percentage
1	Assessment of hair	1,2,3	3	14.28
2	Assessment of scalp	4,5,6,7,8,9,10,11,12	9	42.86
3	Difficulties due to pediculosis	13,14,15,16,17,18,19,20,21	9	42.86

APPENDIX -N

OBSERVATIONAL CHECKLIST FOR SIGNS AND SYMPTOMS OF PEDICULOSIS

Pediculosis

To assess the effectiveness of neem oil upon pediculosis.

Instruction

The instructor will observe and gives score. The information collected will be kept confidential and anonymity will be maintained.

S.No	Signs and symptoms of pediculosis	Yes (1)	No (0)
1.	Dandruff		
2.	Nits on the hair		
3.	Brittleness of hair		
4.	Scaling		
5.	Scratch marks		
6.	Itching sensation in the scalp		
7.	Viable louse on the head		
8.	Scratching the head vigorously		
9.	Sores from scratching		
10.	Small crusts of dried blood around sites where bites have occurred.		
11.	Red bumps on child's scalp		

12.	Loss of hair		
13.	Sleep disturbance due to itching		
14.	Fatigue and irritability due to loss of sleep		
15.	Skin Infections occurs if the bites are scratched		
16.	An abrasion of the skin(excoriation)		
17.	Redness of the scalp		
18.	Conjunctivitis		
19.	Fever		
20.	Anemia		
21.	Enlarged tender cervical lymph nodes		

Scoring

The observational checklist with 21 items is divided into three categories of degree of pediculosis according to its severity in affecting the school children .

Score	**Degree of pediculosis**
1-7	Mild
8-14	Moderate
15-21	Severe

தலையிலுள்ள பேன்களின் அறிகுறிகளும், அடையாளமும் குறித்து அறியும் அட்டவணை

நோக்கம்:

தலையில் உள்ள பேன்களின் மீது வேம்பு எண்ணெயின் பலனை மதிப்பீடு செய்தல்.

அறிவுரை:

அறிவுரை புகட்டுவோர் இதன் நிலையை குறித்து நமக்கு தகவல் அளிப்பார். இத்தகவல்கள் ரகசியமாக வைக்கப்படுவதோடு பெயர் தெரிவிக்கப்படாமல் வைக்கப்படும்.

வரிசை எண்	பேன்களின் அறிகுறிகளும் அடையாளங்களும்	ஆம் (1)	இல்லை (0)
1.	போடுகு		
2.	முடியில் இருக்கும் ஈருகள்		
3.	எளிதில் உடையக்கூடிய முடிகள்		
4.	மெல்லிய அடுக்குகள்		
5.	சொறிவதால் வரக்கூடிய கீறல்கள்		
6.	தலையின் தோல் பகுதியில் அரிப்பு ஏற்படுவதால் சொறிதல்		
7.	தலையில் பேன்களின் சாத்தியம்		
8.	அதிகமாக தலையை சொறிதல்		

9.	சொறிதலினால் உண்டாகும் புண்கள்		
10.	கடித்த இடத்தில் சொறிந்ததால் உண்டாகும் இரத்தம் உறைந்து கடடிப்போல் காணப்படுதல்		
11.	குழந்தையின் தலையின் தோல்பகுதியில் சிவந்த நிறத்தில் உள்ள வீக்கம்		
12.	முடி உதிர்தல்		
13.	சொறிதலினால் தூக்கமின்மை		
14.	தூக்கமின்மையினால் வரும் களைப்பும், தொல்லைகளும்		
15.	கடித்த இடங்களை சொாறிவதினால் நோய் உண்டாகுதல்		
16.	தோலின் பகுதியை தேய்த்தல் (தோலை அகற்றுதல்)		
17.	தோலில் சிவப்பு நிறம் உண்டாதல்		
18.	கண் நோய்		
19.	காய்ச்சல்		
20.	இரத்த சோர்வு		
21.	வீக்கமடைந்த மென்மையான நிணநீர் கனு.		

கணிப்பு:

மேற்கண்ட 21 குறிப்புகள் பள்ளியில் பயிலும் மாணவிகளிடம் காணப்படும் பேன் தொல்லை. எந்த அளவிற்கு பாதிப்பு ஏற்படுத்துகிறது என்பதின் அடிப்படையில் மூன்றாக வகைப்படுத்தப்பட்டுள்ளது.

மதிப்பீடு	**தலையில் உள்ள பேன்களின் நிலை**
1 – 7	கடுமையற்றது
8 – 14	மிதமானது
15 – 21	கடுமையானது

APPENDIX -O

BLUE PRINT OF STRUCTURED QUESTIONNAIRE ON

KNOWLEDGE REGARDING PREVENTION OF PEDICULOSIS

S.No	Content	Items	Total items	Percentage
1	Meaning of pediculosis, prevalence and causes of pediculosis	1,2,3,4,5,6,7	7	35
2	Mode of transmission, clinical manifestation	8,9,10,11,12,13	6	30
3	Detection and complication of pediculosis	14,15,16,17	4	20
4	Treatment and prevention of pediculosis	18,19,20	3	15

APPENDIX -P

STRUCTERD INTERVIEW SCHEDULE ON KNOWLEDGE REGARDING PREVENTION OF PEDICULOSIS

Purpose

This structured interview schedule is used to collect information on knowledge of children regarding prevention of pediculosis.

Instructions

The structured interview schedule consists of multiple choice questions. Please read the questions and the answer them. Place a (✓) mark against the right answer for each question. A score of '1' will be given for the right answer. Please be frank in your responses. The information collected will be kept confidential and anonymity will be maintained.

1. What is pediculosis?

a) It is a worm infestation ☐

b) It is a germ infestation ☐

c) It is a lice infestation ☐

d) It is a ticks infestation ☐

2. Where do the lice lay eggs?

a) On the scalp ☐

b) Base of the strands of hair ☐

c) Back of the neck ☐

d) Eyelashes ☐

3. Which people are more prone to get pediculosis?

a) People of low socio economic levels ☐

b) People of moderate socio economic levels ☐

c) People of high socioeconomic levels ☐

d) People of all socio economic levels ☐

4. Which age group is commonly affected by pediculosis?

a) Toddler ☐

b) School children ☐

c) Adults ☐

d) Geriatric group ☐

5. What is the age that affects pediculosis more?

a) < 3 ☐

b) 4-5 ☐

c) 6-15 ☐

d) >15 ☐

6. Which is the main cause of pediculosis?

a) Improper diet ☐

b) Long hair ☐

c) Unhygienic practices ☐

d) Unclean clothes ☐

7. How are pediculosis spread ?

a) Wearing another persons hat or clothes ☐

b) Sharing comb, brush and bedding ☐

c) Head to head contact ☐

d) All the above ☐

8. Where does the transmission of pediculosis occur?

a) Schools ☐

b) Camps ☐

c) Homes ☐

d) All the above ☐

9. What is the rate at which the pediculosis spread?

a) More slowly ☐

b) Moderately ☐

c) More quickly ☐

d) Won't spread ☐

10. What is the early sign of pediculosis?

a) Itching ☐

b) Anemia ☐

c) Lymph node enlargement ☐

d) Fever ☐

11. What is the main reason for sleep disturbance among pediculosis children?

a) Lymph node enlargement ☐

b) Anemia ☐

c) Itching ☐

d) Social stigma ☐

12. What is the hair change seen in pediculosis children?

a) Hair growth ☐

b) Hair loss ☐

c) Brittleness of hair ☐

d) No changes ☐

13. What is the common skin problem in pediculosis?

a) Boils ☐

b) Scabies ☐

c) Great irritation of the skin ☐

d) Pimple ☐

14. How is the academic performance among the pediculosis children?

a) Less concentration level ☐

b) High concentration level ☐

c) Very high concentration level ☐

d) No changes ☐

15. How does the pediculosis affect you?

a) Alters my nutritional need ☐

b) Gives discomfort and irritation ☐

c) Interrupt my activity ☐

d) Reduces the weight ☐

16. Who is the only reservoir for pediculosis?

a) Animals ☐

b) Birds ☐

c) Humans ☐

d) Anhropods ☐

17. What is the most frequent complication of pediculosis?

a) Anemia ☐

b) Fever ☐

c) Purulent skin disease (Pyoderma) ☐

d) Lymphadinopathy ☐

18. What is the best natural treatment for pediculosis?

a) Application of shampoo ☐

b) Combing the hair ☐

c) Application of oil ☐

d) Application of vinegar ☐

19. How does pediculosis be prevented?

a) Proper drying of hair after bathing ☐

b) Following hygienic practices ☐

c) Eating nutritional diet ☐

d) Cutting the nails ☐

20. How does pediculosis be prevented from non washable items ?

a) Throw the item ☐

b) Keep it under sunlight ☐

c) Pack in a sealed plastic bag for 2 weeks ☐

d) Vacuums the item ☐

Scoring

≤50% (≤ 12) - Inadequate knowledge

51 – 75% (13 – 18) -Moderately adequate knowledge

≥75 % (≥19) -Adequate knowledge

தலையில் பேன்களை தடுப்பதற்கான அறிவை குறித்துள்ள அட்டவணைக்குரிய நேர்முகத் தேர்வு

நோக்கம்:

குழந்தைகளுக்கிடையில் பேன் தொல்லை தடுப்பதை பற்றிய அறிவுக் குறித்த தகவல்களை சேகரிப்பதற்கான அட்டவணைக்குரிய நேர்முகத் தேர்வு

அறிவுரை:

அட்டவணைக்குரிய நேர்முகத் தேர்வில் அளிக்கப்பட்டுள்ள கேள்விகளுக்கு பலவிதமான விடைகள் தரப்பட்டுள்ளன. அதில் சரியான விடையை பார்த்து தேர்ந்தெடுக்கவும். ஒவ்வொரு சரியான பதிலுக்கும் ஒரு மதிப்பெண் அளிக்கப்படும். தயவு செய்து உங்களது பதிலை வெளிப்படையாக அளிக்கவும். இத்தகவல்கள் ரகசியமாக வைக்கப்படுவதோடு, பெயர் தெரிவிக்கப்படாமல் வைக்கப்படும்.

1. பெடிகுளோசிஸ் என்றால் என்ன?

அ. இது ஒரு தாக்குதல் ☐

ஆ. இது ஒரு நுண்ணுயிர் தாக்குதல் ☐

இ. பேனின் தாக்குதல் ☐

ஈ. நாய் உண்ணியின் தாக்குதல் ☐

2. பேன் எங்கே முட்டையிடும்?

அ. தலையின் தோல்பகுதியில் ☐

ஆ. முடியின் ஆரம்பபகுதியில் ☐

இ. கழுத்தின் பின்புறம் ☐

ஈ. இமைகளில் ☐

3. அதிகமாக எந்த மக்களிடையே இந்நோய் காணப்படுகிறது?

அ. தாழ்ப்பட்ட சமூகத்தில் உள்ள மக்களிடையே ☐

ஆ. நடுநிலை சமூகத்தில் உள்ள மக்களிடையே ☐

இ. உயர்ந்த சமூகத்தில் உள்ள மக்களிடையே ☐

ஈ. அனைத்து சமூகத்தில் உள்ள மக்களிடையே ☐

4. எந்த பருவத்தில் உள்ளவர்கள் இதனால் பாதிக்கப்படுவார்கள்?

அ. தளர் நடை போடும் குழந்தைகள் ☐

ஆ. பள்ளிக்குச் செல்லும் குழந்தைகள் ☐

இ. முதிர்ச்சி அடைந்தவர்கள் ☐

ஈ. முதியோர்கள் ☐

5. எந்த வயதில் உள்ளவர்கள் அதிகமாக இந்நோயால் பாதிக்கப்படுவார்கள்?

அ. 13 ☐

ஆ. 4-5 ☐

இ. 6-15 ☐

ஈ. 15 ☐

6. தலையில் பேன்கள் வரக்கூடியதற்கு முக்கிய காரணங்கள் என்ன?

அ. தவறான உணவு பழக்கங்கள் ☐

ஆ. நீளமான முடி ☐

இ. சுத்தமின்மை ☐

ஈ. அசுத்தமான ஆடைகள் ☐

7. தலையில் உள்ள பேன்கள் மற்றவர்களுக்கு எவ்வாறு பரவுகின்றன?

அ. பிறருடைய ஆடைகளையோ, தொப்பியையோ பயன்படுத்துவதால் ☐

ஆ. சீப்பு, முடி துலக்கி மற்றும் படுக்கையை பகிர்ந்து கொள்வதால் ☐

இ. தலையும், தலையும் சேரும் போது ☐

ஈ. மேற்கூரியவை அனைத்தும் ☐

8. பேன்கள் எந்த விகிதத்தில் பரவுகின்றன?

அ. மிகவும் தாமதமாக ☐

ஆ. மிதமாக ☐

இ. வெகு விரைவில் ☐

ஈ. பரவாது ☐

9. பெடிகுளோசிளின் முதல் அறிகுறி என்ன?

அ. சொரிதல் மற்றும் அரிப்பு ☐

ஆ. இரத்த சோகை ☐

இ. நிணநீர் கனி வீங்குதல் ☐

ஈ. காய்ச்சல் ☐

10. குழந்தைகளுக்கிடையில் பேன் தொல்லை காரணமாக உறக்கம் தடை படுவதற்கான முக்கிய காரணம் என்ன?

அ. நிணநீர் கனி வீங்குதல் ☐

ஆ. இரத்த சோகை ☐

இ. அரிப்பு ☐

ஈ. சமூக அவதூறு ☐

11. பேன் தொல்லை உள்ள குழந்தைகளின் முடியில் என்னென்ன மாற்றங்கள் காணப்படுகின்றன?

அ. முடி வளருதல் ☐

ஆ. முடி உதிர்தல் ☐

இ. முடி எளிதில் உடைதல் ☐

ஈ. எந்த வித மாற்றமும் இல்லை ☐

12. பெடிகுளோசிஸினினால் பொதுவாக காணப்படுகின்ற தோல் சம்பந்தமான பிரச்சினை எது?

அ. கொப்புளம் ☐

ஆ. சொரி, சிரங்கு ☐

இ. தோலில் அதிகமாக எரிசிசலூட்டுவது ☐

ஈ. முகப்பரு ☐

13. பெடிகுலோசிஸின் காரணமாக அவதிப்படும் குழந்தைகளின் கல்வி திறமை எவ்வாறு பாதிக்கப்படுகிறது?

அ. செறிவாக்கும் தன்மை குறைதல் ☐

ஆ. செறிவாக்கும் தன்மை அதிகமாதல் ☐

இ. மிக அதிகமாக செறிவாக்கும் தன்மை ☐

ஈ. எந்த வித மாற்றமும் இல்லை ☐

14. பெடிகுளோசிஸ் உங்களை எவ்வாறு பாதிக்கிறது?

அ. ஊட்டச்சத்தின் தேவையை திருத்தியமைத்தல் ☐

ஆ. உடல்நலமின்மையும், எரிச்சலையும் தருதல். ☐

இ. என்னுடைய செயல்களால் குறுக்கீடு செய்தல் ☐

ஈ. எடையை குறைத்தல் ☐

15. பெடிகுளோசிஸின் ஒரே உறைவிடம் எது?

அ. மிருகங்கள் ☐

ஆ. பறவைகள் ☐

இ. மனிதர்கள் ☐

ஈ. பூச்சிகள் ☐

16. பெடிகுளோசிஸினினால் அடிக்கடி வரக்கூடிய சிக்கல்கள் என்ன?

அ. இரத்த சோகை ☐

ஆ. காய்ச்சல் ☐

இ. சீழ்வழியக்கூடிய ஒரு தோல்நோய் (பயோடெர்மா) ☐

ஈ. நிணநீர் கட்டுதல் ☐

17. பெடிகுளோசிசை குணமாக்க உரிய இயற்கையான முறை எது?

அ. தலைமுடி கழுவு நீர்மம் உபயோகித்தல் ☐

ஆ. முடியை வாருதல் ☐

இ. எண்ணெயை உபயோகித்தல் ☐

ஈ. புளிக்காடியை உபயோகித்தல் ☐

18. பெடிகுளோசிசை குணமாக்க உரிய இயற்கையான முறை எது?

அ. தலைமுடி - கழுவு - நீர்மம் உபயோகித்தல் ☐

ஆ. முடியை வாருதல் ☐

இ. எண்ணெயை உபயோகித்தல் ☐

ஈ. புளிக்காடியை உபயோகித்தல் ☐

19. கழுவ முடியாத பொருட்களின் மீது பெடிகுளோசிஸ் உண்டாக்காமல் எவ்வாறு தடுக்க முடியும்?

அ. அந்த பொருளைத் தூக்கி போட வேண்டும் ☐

ஆ. கூரிய வெளிச்சத்தில் வைக்கவும் ☐

இ. இரண்டு வாரங்களுக்கு பாலிதீன் பைகளில் அவற்றை கட்டி வைக்கவும் ☐

ஈ. அந்த பொருளை வாக்யூம் செய்து தூய்மையாக்கவும் ☐

20. உங்களது சீப்பையும், முடி தூலக்கியையும் எப்படி, எவ்வளவு நேரத்தில் தூய்மை படுத்துவீர்கள்?

அ. குளிர்ந்த நீரில் மூன்று நிமிடம் வைக்க வேண்டும் ☐

ஆ. ஒடும் நீரில் ஐந்து நிமிடம் வைக்க வேண்டும் ☐

இ. கொதிக்கும் தண்ணீரில் ஐந்து நிமிடம் வைக்க வேண்டும் ☐

ஈ. அந்த பொருட்களை தண்ணீரில் கொஞ்சம் நனைக்க வேண்டும் ☐

மதிப்பீடு

50% (12)	-	குறைவான அறிவு
51-75% (13-18)	-	மிதமான அறிவு
75% (19)	-	தேவைக்கேற்ற அறிவு

Scoring key

1- c

2- b

3- d

4- b

5- c

6- c

7- d

8 -d

9- c

10-a

11-c

12-c

13-c

14-a

15-b

16-c

17-c

18-b

19-b

20-c

APPENDIX -K

BLUE PRINT

RATING SCALE ON SATISFACTION OF NEEM OIL

S.No	Content	Item No.	Total Items	Percentage
1.	Researcher	1,2,3	3	27.27
2.	Administration of neem oil	4,5,6,7,8,9	6	54.54
3.	Effectiveness of neem oil	10,11	2	18.19

APPENDIX -J

RATING SCALE ON THE SATISFACTION OF ADMINISTRATION OF NEEM OIL

Purpose

This rating scale is designed to assess the level of satisfaction of the pediculosis clients regarding the administration of neem oil.

Instruction

There are five items given below. Kindly read the items where responses extend from highly satisfied to dissatisfied. Describe you satisfaction regarding the administration by neem oil .Give your responses freely and frankly. The responses will be kept confidential.

S.No	Items	Highly satisfied	Satisfied	Dissatisfied
	Researcher			
1	Explanation regarding neem oil application			
2	Approach of the researcher			
3	Time spent by the researcher			
	Administration of neem oil			
4	Duration of administration			
5	Frequency of administration			
6	Cost of the therapy			

7	Comfortness			
8	Easy to use			
9	Easy to follow			
	Effectiveness of therapy			
10	Reduction of pediculosis			
11	No complications			

Score Interpretation

< 50 % - Dissatisfied

51 – 75% - Satisfied

>75% - Highly Satisfied.

வேம்பு எடண்ணெயை உபயோகித்தவர்களின் மனதிருப்தியை தரம் பார்க்கும் அளவுகோல்

நோக்கம்:

பெடிகுலோசிஸ் உள்ள நபர்களில் வேம்பு எண்ணெயை பயன்படுத்தியவர்களின் மனதிருப்தியை தரம் பார்ப்பதற்கான அளவுகோல்.

அறிவுரை:

இதற்கு கீழே ஐந்து வகைகள் உள்ளன. தயவு செய்து இவற்றை படிக்கவும். இதன் பதில் அதிகம் திருப்தியடைந்தவர்கள் முதல் திருப்தியடையாதவர்கள் வரை உள்ளது. வேம்பு எண்ணெயை பயன்படுத்தியதில் உங்களது கருத்தகளை தெரிவிக்கவும். உங்கள் பதில்களை சுயமாகவும் தெளிவாகவும் தெரிவிக்கவும். இத்தகவல்கள் ரகசியமாக பாதுகாக்கப்படும்.

வரிசை எண்	**வகைகள்**	**முழுமையான திருப்தி அடைந்தவர்கள்**	**திருப்தி அடைந்தவர்கள்**	**குறைவான திருப்தி அடைந்தவர்கள்**
ஆய்வாளர்				
1.	வேம்பு எண்ணெயை உபயோகித்தல் பற்றி விளக்குதல்			
2.	அறிவுரையாளரின் அனுகுமுறை			
3.	அறிவுரையாளர் செலவழித்த நேரம்			

வேம்பு எண்ணெயை பயன்படுத்துதல்				
4.	பயன்படுத்துவதின் கால அளவு			
5.	எத்தனை முறை உபயோகப்படுத்தப்பட்டது			
6.	சிகிச்சை முறையின் செலவு			
7.	ஆறுதளிப்பது			
8.	எளிதில் உபயோகிப்பது			
9.	எளிதாக பின்பற்றக் கூடியது			
சிகிச்சையின் பயன்கள்				
10.	பெடிகுளோசிசை குறைப்பது			
11.	குறைவான சிக்கல்கள்			

மதிப்பீட்டை விவரித்தல்

< 50% - மனநிறைவின்மை

51 – 75% - நிறைவடைந்தவர்கள்

< 75% - மிகவும் நிறைவடைந்தவர்கள்

APPENDIX L

DATA CODE SHEET

Age in years	**AGE**	**S.S-Signs and symptoms**	
10-11	1	Mild	1
12-13	2	Moderate	2
14-15	3	Severe	3
Class of study	**COS**	**LOK-Level of knowledge**	
5^{th} -6^{th}	1	Inadequate	1
7^{th}-8^{th}	2	Moderately adequate	2
9^{th}-10^{th}	3	Adequate	3
Nativity of the Child NOC		**RSOLOS-Rating scale on level of satisfaction**	
North India	1	Dissatisfied	1
South India	2	Satisfied	2
Any Others	3	Highly satisfied	3

Length of stay in the orphanage LOS	
<1 year	1
1-3 years	2
> 3 years	3
Length of hair	**LOH**
<5 cm	1
5-15	2
>15	3

DEGREE OF PEDICULOSIS- DOP

Score	Inference	Signs and symptoms
0	Children with no signs of pediculosis	No pediculosis
0+	Children with evidence of past infestation	They only showed nits more than 1 cm of the scalp (Dead nits)
1	Children with a recent infestation and low probability of active parasitism	They showed up to 10 nits less than 1 cm from the scalp.
2	Children with a recent infestation and high probability of active parasitism	They showed more than 10 nits less than 1 cm from the scalp, with no mobile lice observed.
3	Children with mobile lice (active pediculosis)	Mobile lice and nits close to the scalp were observed.

APPENDIX L
MASTER CODE SHEET

CON GR	DEMOGRAPHIC VARIABLE					DOP		S.S				LOK		LOS	
								BA		AA					
	AGE	COS	NOC	LOS	LOH	BA	AA	Score	Int.	Score	Int.	Score	Int.	Score	Int.
1	1	1	2	2	3	3	2	8	2	8	2	10	1		
2	1	1	2	2	3	3	3	9	2	7	1	8	1		
3	1	1	2	2	3	2	3	8	2	8	2	12	2		
4	1	1	2	2	3	2	3	8	2	8	2	12	1		
5	1	1	2	2	2	3	3	9	2	10	2	8	1		
6	1	2	2	2	2	3	2	10	2	9	2	7	1		
7	2	2	2	3	3	3	3	9	2	9	2	8	1		
8	2	2	2	2	3	3	2	11	2	9	2	9	1		
9	2	2	2	2	3	3	3	9	2	9	2	9	1		
10	1	1	2	3	2	3	3	9	2	10	2	9	1		
11	3	2	2	2	3	3	3	9	2	10	2	13	2		
12	2	1	2	3	2	2	3	8	2	9	2	10	1		
13	3	3	2	3	3	3	2	10	2	9	2	14	2		
14	2	2	2	3	3	3	3	10	2	8	2	11	1		
15	2	2	2	3	3	3	3	9	2	9	2	10	1		
16	2	2	2	3	3	3	2	11	2	11	22	10	1		
17	2	2	2	1	3	3	3	9	2	9	2	10	1		
18	2	1	2	2	2	2	2	7	1	8	2	14	2		
19	3	3	2	3	2	2	3	8	2	8	2	10	1		
20	3	3	2	3	3	3	3	9	2	9	2	14	2		
21	3	3	2	2	3	2	2	8	2	8	2	12	2		
22	3	3	2	3	3	3	3	10	2	10	2	11	1		
23	2	2	2	3	3	3	2	9	2	9	2	10	1		
24	2	2	2	3	3	2	3	9	2	7	1	10	1		
25	2	2	2	3	3	3	3	9	2	8	2	11	1		
26	3	3	2	3	3	3	3	8	2	8	2	13	2		
27	3	3	2	3	3	3	3	9	2	8	2	10	1		
28	2	2	2	3	3	3	3	11	2	10	2	9	1		
29	1	1	2	2	3	2	3	8	2	8	2	9	1		
30	1	1	2	1	3	2	3	9	2	9	2	8	1		

	Demographic variables					DOP		S.S				LOK		LOS	
								BA		AA					
EXP GR	AGE	COS	NOC	LOS	LOH	BA	AA	Score	Int	Score	Int	Score	Int	Score	Int
1	3	3	2	3	3	3	0+	10	2	3	1	14	2	90	3
2	2	2	2	3	2	3	1	11	2	8	2	8	1	85	3
3	1	1	2	2	2	3	0+	11	2	8	2	10	1	89	3
4	1	1	2	3	3	2	0	8	2	2	1	13	2	80	3
5	2	2	2	3	3	3	1	9	2	4	1	8	1	82	3
6	2	2	2	3	3	2	1	8	2	2	1	9	1	70	2
7	2	2	2	3	3	3	1	10	2	4	1	8	1	89	3
8	1	1	2	3	2	3	1	11	2	3	1	13	2	87	3
9	2	2	2	3	3	3	0+	10	2	3	1	10	2	74	2
10	1	1	2	2	2	2	1	8	2	3	1	8	1	85	3
11	1	1	2	2	2	3	1	12	2	4	1	9	1	86	3
12	1	1	2	2	2	2	0	8	2	2	1	12	2	89	3
13	1	1	2	2	2	3	1	11	2	8	2	9	1	72	2
14	1	1	2	3	2	3	1	12	2	4	1	8	1	78	3
15	1	1	2	3	3	3	0	11	2	8	2	15	2	88	3
16	1	1	2	3	2	3	1	9	2	4	1	11	1	73	2
17	1	1	2	2	2	2	0	8	2	2	1	14	2	89	3
18	1	1	2	3	2	3	1	10	2	2	1	7	1	88	3
19	1	1	2	3	3	3	1	7	1	3	1	9	1	71	2
20	1	1	2	2	2	3	1	11	2	4	1	15	2	89	3
21	1	1	2	1	1	2	0	8	2	2	1	10	1	85	3
22	2	2	2	3	2	2	1	8	2	3	1	9	1	74	2
23	1	1	2	2	1	3	1	10	2	3	1	16	2	87	3
24	3	2	2	3	2	3	1	9	2	3	1	8	1	70	2
25	3	3	2	3	2	3	1	9	2	3	1	12	2	85	3
26	1	1	2	2	1	3	1	7	1	4	1	9	1	87	3
27	2	2	2	2	3	3	1	9	2	2	1	13	2	88	3
28	3	3	2	3	3	3	1	12	2	8	2	9	1	68	2
29	1	1	2	2	3	3	0+	9	2	2	1	9	1	84	3
30	2	2	2	1	1	2	1	8	2	2	1	10	1	81	3