

# A Randomized Controlled Trial on the Efficacy of Video Assisted Instruction Compared with Classical Prescription Type Instruction in Enhancing Knowledge on the Management of Pediculosis Capitis among Parents and Guardians\*

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## ABSTRACT

**Introduction:** Pediculosis capitis is a major health concern in Philippine public schools, with the prevalence rate as high as 54.7% at the primary level affecting more females (66.5%) compared to males (42.3%). Worldwide, head lice infestation is a persistent and growing problem with varying prevalence rates in both developed and developing countries. Despite effective scabicial therapy, there is poor compliance of parents or guardians of patients with Pediculosis capitis, affecting the effectiveness of treatment. Researchers are now focused on eradicating this disease by increasing compliance through video assisted learning.

**Objectives:** To compare the efficacy of video assisted instruction versus classical prescription type instruction in enhancing the knowledge on the management of Pediculosis capitis.

**Methodology:** A single-blind randomized clinical trial was performed at Barangay Del Pilar, City of San Fernando, Pampanga. Parents or guardians with children from 4 – 6 years old were randomized to video assisted type instruction or classical prescription type instruction. Pre-test and post-test was done before and after the intervention respectively.

**Results** At post-test, average scores had significantly improved from pre-test in both types of instruction (60% to 100%,  $p < 0.0001$ ; 80% to 100%,  $p < 0.0001$ ). Average difference between pre- and post-test scores were significantly higher among parents or guardians administered with video assisted instruction (30% vs 10%,  $p < 0.0001$ ). A significantly higher proportion of parents or guardians administered with video assisted instruction improved their level of knowledge from inadequate or moderate to adequate ( $p < 0.0001$ ). Video assisted instruction was effective in improving knowledge on management of Pediculosis capitis.

**Conclusion** This research supports the efficacy of video assisted instruction in enhancing the knowledge of parents or guardians regarding the management of Pediculosis capitis. A significant increase in the level of knowledge of the participant may serve as a useful tool in providing better understanding on the proper handling and care of such cases.

**Keywords:** pediculosis capitis, video assisted instruction, educational instruction, enhancing the knowledge

*Disclosures:* The author has formally acknowledged and signed a disclosure affirming the absence of any financial or other relationships (including personal connections), intellectual biases, political or religious affiliations, and institutional ties that could potentially result in a conflict of interest.

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## INTRODUCTION

Pediculosis capitis is caused by a host specific, obligate ectoparasite known as *Pediculus humanus capitis*.<sup>1</sup> It has been a problem in public schools in the Philippines, with no existing government health programs to aid in eradication. In the Philippines alone, the prevalence of the disease is high at 54.7% in primary schools and females are usually more affected (66.5%) than males (42.3%).<sup>1</sup> Worldwide, head lice infestation is a persistent and growing problem with a varying prevalence rates in both developed and developing countries such as 0–28% in Victoria, Australia, 8.9% in Ghent, Belgium, 0.8% in Afyon, Turkey, 3.8% in Kerman, Iran, 3.8%–13.9% in Bogota, Columbia, 13.3% in Al-Mahweet, Yemen, 16.59% in India 58.9% in Alexandria, Egypt and 81.5% in Argentina.<sup>2,5</sup>

The *Pediculus humanus capitis* or the head louse can be transmitted through a direct contact with the person infected or by indirect contact with the use of personal materials such as comb, hair brush and head gear from an infected person.<sup>5</sup>

Pediculosis capitis can be a recurrent disease if not treated well. In the Philippines, poverty, poor hygiene and lack of knowledge on proper treatment are the causes of the high prevalence of the disease.<sup>2</sup> Permethrin 1% shampoo is the first line treatment of head lice as recommended by the American Academy of Pediatrics. It is a synthetic compound derived from pyrethrin that acts on the nerve cell membrane of parasites leading to respiratory muscle paralysis.<sup>1</sup> In several studies, Permethrin is already the drug of choice use as a treatment in comparison to new and upcoming head lice treatment. One study states that 98% of children treated with permethrin are lice free on the 7th day after treatment, and up to the 14th day, 96% of the patients are still lice free.<sup>3</sup> Permethrin has been the most studied pediculicide in the United States and is the least toxic to humans. Introduced in 1986 as a prescription-only treatment, 1% permethrin lotion was approved for over the counter use in 1990 and is marketed as a "creme rinse".<sup>4</sup>

The safety profile of permethrin is favorable, with a low risk for mammalian toxicity. Unlike pyrethrin, permethrin does not cause allergic reactions in people with plant allergies. Adverse effects of permethrin include edema, erythema, hypoaesthesia, and pruritus. A postmarketing surveillance study designed to assess the safety of 1% permethrin creme rinse evaluated 18,950 patients. Adverse events occurred at a rate of 2.2 per 1000 treatments with permethrin. No serious adverse events were reported. Permethrin is classified and labeled as a pregnancy category B drug, meaning that fetal risk has not been studied in a population of pregnant women and that animal reproduction studies have shown no fetal risk or that adverse events in animal studies have not been confirmed in human studies.<sup>5</sup>

## Non-Pharmacologic Management

There are other treatment modalities in Pediculosis capitis. One of the most commonly used non-pharmacologic treatments is the use of fine tooth combing. Removal of nits with fine toothed comb technique is widely used as an adjunctive measure.<sup>1</sup> Manual removal of nits especially the ones within 1 cm of the scalp after treatment with any product is recommended. Fine-toothed "nit combs" are usually used. Studies have suggested that lice removed by combing and brushing are damaged and rarely survive.<sup>6</sup> Another treatment option is the use of occlusive agents like petroleum jelly, herbal oils, mayonnaise and olive oils. It is thought that the viscous substance obstructs the respiratory system of the adult louse as well as the holes in the eggs and blocks efficient air exchange.<sup>6</sup>

## Video Assisted Learning

Video is a potential window that can capture the attention, especially by children, more than the traditional discussion can achieve.<sup>7</sup> The patient's interest in watching video films can be used in the learning system in an entertaining manner. This allows patients to view actual objects and see realistic scenes in sequential motion, listen to the narration, which can entice learners to use the sense of sight and the sense of hearing.<sup>8</sup>



The video assisted learning could enhance the treatment process of head lice as well as to make the patients remember how the treatment and diagnosis are done. As of the moment, only pictures with caption and shampoo literatures are the available material as the main treatment media for the treatment of lice.

With the video assisted method, patients are provided both visual and auditory cues to enhance understanding of the disease and treatment procedures, which, may increase their compliance to the treatment, thereby increase cure rate.

Moreover, with the use of an instructional video, this study aims to provide knowledge and understanding to people infected with *Pediculosis capitis* on a wider scale. Thus instructional video can be uploaded to a video sharing site which can be shared to a bigger audience worldwide.

### Significance of the Study

Although there are many published studies on the efficacy of video assisted learning in instructing individuals on how to manage their conditions, there are no such studies for *pediculosis capitis*. By providing a visual aid for the treatment of this condition, this may provide better understanding among the parents or guardians that could lead to eradication of the condition in schools and barangays, and furthermore on a mass scale in larger communities.

### Review of Related Literature

Learning from an electronic medium or e-learning has become an alternative to the traditional learning. It has become one of the fastest-moving trends and aims to provide a variety of learning system that generates learning materials, tools, and other options into a solution to deliver educational content quickly, effectively, and economically.<sup>7</sup>

In the study by Pushpakala et.al, the effectiveness of video assisted teaching on the knowledge and practice of using metered dose inhaler with spacer was done with patients diagnosed with bronchial asthma. The results showed that video assisted teaching is an effective method in increasing

the knowledge and practice of using the metered dose inhaler. The study result showed that in pre-test, 77% of patient had moderate level of knowledge, 23% had inadequate level of knowledge and in post-test, 92% of adequate knowledge and only 8% had moderate knowledge. With regards to practice, the results showed that in pre-test, 60% of patient had poor practice, 40% had moderate practice and in post-test, they improved their practice to 92% of excellent practice and 8% of moderate practice. These findings of the study revealed a significant increase in the post test knowledge and practice scores after administration of video assisted teaching.<sup>9</sup>

In a randomized controlled trial study by Mhalu et.al, an instructional video on proper sputum submission was shown to see if there would be an increase in tuberculosis case detection. The results showed that the instructional video intervention was associated with detection of a higher proportion of microscopically confirmed cases (56%, 95% confidence interval [95% CI] 45.7–65.9%, sputum smear positive patients in the intervention group versus 23%, 95% CI 15.2– 32.5%, in the control group,  $p < 0.0001$ ), an increase in volume of specimen defined as a volume  $> 3\text{ml}$  (78%, 95% CI 68.6–85.7%, versus 45%, 95% CI 35.0–55.3%,  $p < 0.0001$ ), and specimens less likely to be salivary (14%, 95% CI 7.9–22.4%, versus 39%, 95% CI 29.4–49.3%,  $p = 0.0001$ ). It was concluded that the instructional video increased the yield of tuberculosis cases through better quality of sputum samples.<sup>10</sup>

Another study by Shaw, et al. on pressurised metered dose inhaler spacer technique was investigated in 122 children, aged 2–7 years, with asthma. Eight individual steps of device technique were evaluated before and after viewing an instructional video for correct device technique. The results showed that the device technique improved directly after video instruction at the baseline study visit ( $p < 0.001$ ) but had no immediate effect at subsequent visits. Additionally, pMDI-spacer technique improved with successive visits over one year for the group overall as evidenced by increases in the proportion of children scoring maximal ( $p = 0.02$ ) and near- maximal ( $p = 0.04$ ) scores. The study concluded that repeated video



instruction over time improved inhaler technique in young children.<sup>11</sup>

Currently, there are no published studies on the use of video assisted instruction in the diagnosis and management of Pediculosis capitis.

### **Research Question**

What is the efficacy of video assisted instruction compared to the classical prescription type instruction in enhancing the knowledge on the management of Pediculosis capitis among parents or guardians with children 4 to 6 years old?

### **Objective of the Study**

#### **General Objective**

To compare the efficacy of video assisted instruction versus classical prescription type instruction in enhancing the knowledge on the management of Pediculosis capitis.

#### **Specific Objectives**

The specific objectives were:

1. To describe the demographic characteristics of parents or guardians who were administered with video assisted instruction and classical prescription type instruction
2. To compare the knowledge gained between video assisted instruction and classical prescription type instruction
3. To assess the association of gained knowledge with gender, age and educational attainment

## **METHODOLOGY**

### **Study design and subject selection**

This is a randomized controlled trial comparing the efficacy of video assisted treatment instruction with classical prescription type instruction in enhancing knowledge on the management of Pediculosis capitis. The study was conducted in Barangay Del Pilar, City of San Fernando, Pampanga last May to June 2017. Parents or guardians of

children 4 to 6 years old were invited to join the study and informed consent was given.

Participants were included if they fulfill the following criteria: parents or guardians of children 4 to 6 years old, participants who gave their consent, and participants who can comprehend the Filipino language.

They were excluded if they are not residents of Barangay Del Pilar, San Fernando, Pampanga and if they did not consent to the study.

### **Randomization and Allocation concealment**

The parents or guardians were randomized into two groups: the video assisted instruction group and the classical prescription type instruction group, using a computer-generated randomization ([www.randomizer.org](http://www.randomizer.org)). The randomization codes were placed in sealed, opaque, sequentially numbered envelopes and were opened separately by the primary investigator per subject as they arrived for the study initiation.

### **Blinding**

The co-investigator is the assigned assessor and was blinded in the study. She administered the pre- and post-test examination on both groups. The primary investigator then administered either the video assisted treatment or the classical prescription type instruction depending into which group the patient was assigned to. The statistician who performed the data analysis was blinded as well as to which group each study arm belongs. Data in both study groups were grouped and labeled either A or B by the primary investigator when submitted to the statistician.

### **Study Procedure**

1. Pilot-testing of the video and questionnaires was done by the primary investigator prior to the study. The validation procedure for the materials was done by administering the video and questionnaires to 10 randomly selected individuals.



2. Parents or guardians of children 4 to 6 years old who fulfilled the criteria were recruited to join the study.
3. A written, informed consent was obtained from the participants.
4. Parents or guardians accomplished a chart for their demographic data (age, gender and educational attainment).
5. The co-investigator administered the 10-item pre-test to the participants.
6. The participants were randomly assigned into two groups: the video assisted instruction group and the classical prescription type instruction group.
7. The primary investigator gave the intervention, depending on the participant's assignment: either the video assisted treatment or the classical prescription type instruction. Same length of time was allotted for both groups.
8. After the session, the co-investigator administered a 10-item post-test to the participants to determine the level of understanding or the knowledge gained.

### Outcome Measure

In order to measure the efficacy of the type of instruction given, the difference in the pre- test and post-test scores were determined. These differences were compared depending on the type of intervention given (i.e. video assisted or classical type).

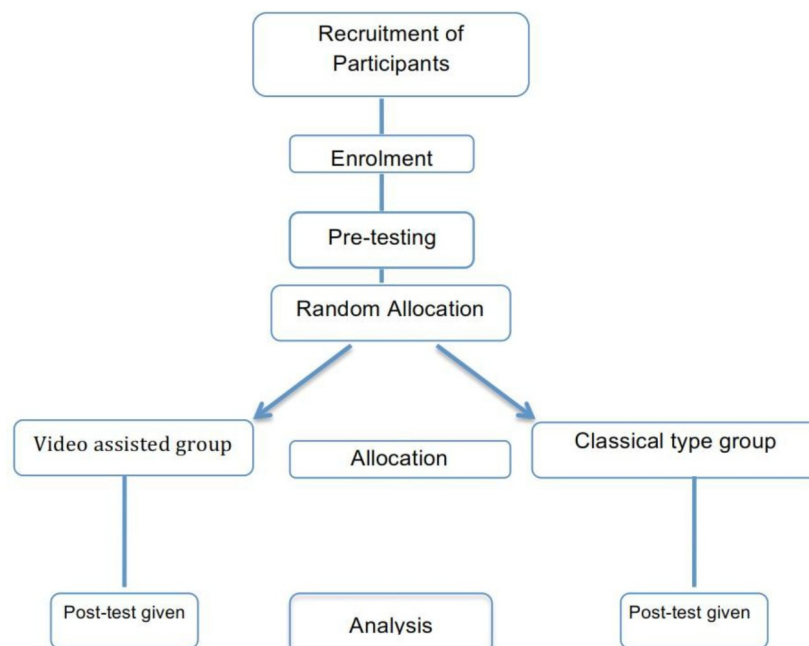
### Data Analysis Plan

#### Justification of Sample Size

A minimum of 172 parents or guardians with children 4-6 years old satisfying the inclusion and exclusion criteria were included in the study based on 5% level of significance and 80% power.

### Statistical Methods

The collated data were examined and the missing values were accounted for during the statistical analysis. Summary statistics were presented in tables or graphs and reported as median (IQR) for quantitative outcome measures (e.g. age in years, pre- and post-test knowledge scores) or n (%) for qualitative measures (e.g. gender, educational attainment, level of knowledge). Checks for homogeneity of sample population and normality assumptions were performed. Wilcoxon Sum Rank Test was used to compare average difference in pre- and post-test scores between video assisted and classical type instruction groups. Wilcoxon Sum Rank Test test was used to compare pre- and post-test scores. Fisher's exact test was used to compare



**Fig 1.** Outline of Study Procedure



proportions. Chi-square test of association was used to determine association between knowledge gained and gender, age and education. Statistical significance was based on  $p$ -value  $< 0.05$ . Data processing and statistical analyses were performed using STATA v13.

## RESULTS AND DISCUSSION

### A. Demographics

There were 175 participants, 11 (6.3%) were males and 164 (93.7%) were females. A total of 89 participants were randomly selected for the group who received video assisted instruction while 86 participants received classical type instruction.

The sample size of 175 was composed of the following age brackets with 10-year intervals. There were four age groupings and included: 18-29, 30-39, 40-49,  $> 50$ . Sixty one (61) participants belonged to the 18-29, fifty four (54) to the 30-39, thirty eight (38) were in the 40-49, and twenty two (22) to the 50 years old and above age brackets.

The educational background of the participants were classified into elementary, high school and college. Twenty-five (25) of the participants attained elementary, one hundred twenty four (124) were at high school level, and twenty six (26) attained college education level. Table 1 shows the demographic data of the participants.

**Table 1: Demographic characteristics of parents or guardians**

	All n=175	Video assisted Instruction n=89	Classical type Instruction n=86	p-value
Gender, n (%)				
Male	11 (6.3%)	3 (3.4%)	8 (9.3%)	0.128
Female	164 (93.7%)	86 (96.6%)	78 (90.7%)	
Age in years, mean $\pm$ SD	34 (17)	34 (19)	35 (16)	0.949
Age group in years, n (%)				
18 – 29	61 (34.9%)	32 (36.0%)	29 (33.7%)	0.801
30 – 39	54 (30.9%)	26 (29.2%)	28 (32.6%)	
40 – 49	38 (21.7%)	18 (20.2%)	20 (23.3%)	
$\geq 50$	22 (12.6%)	13 (14.6%)	9 (10.5%)	
Educational attainment, n (%)				
Elementary	25 (14.3%)	12 (13.5%)	13 (15.1%)	0.275
High school	124 (70.9%)	60 (67.4%)	64 (74.4%)	
College	26 (14.9%)	17 (19.1%)	9 (10.5%)	

### B. Knowledge Scores of Parents or guardians

At pre-test, parents or guardians administered with video assisted instruction had significantly lower average test score than those with classical prescription instruction (60% vs 80%,  $p < 0.0001$ ). Levels of knowledge on management of Pediculosis capitis were adequate, moderate or inadequate in 37.1%, 58.4% and 4.5% respectively.

At post-test, average scores had significantly improved from pre-test in both types of instruction (60% to 100%,  $p < 0.0001$ ; 80% to 100%,  $p < 0.0001$ ). Average

difference between pre- and post-test scores were significantly higher among parents or guardians administered with video assisted instruction (30% vs 10%,  $p < 0.0001$ ). A significantly higher proportion of parents or guardians administered with video assisted instruction improved their level of knowledge from inadequate or moderate to adequate ( $p < 0.0001$ ). Video assisted instruction was effective in improving knowledge on management of Pediculosis capitis.



Average knowledge of parents or guardians regarding the prevention and elimination of Pediculosis capitis both improved significantly after administration of video assisted instruction and classical type instruction. However, it was the video assisted instruction group which showed significantly higher test results in the mean difference score between pre- and post test over the classical type instruction.

The video assisted instruction was calculated as statistically significantly effective in improving knowledge with regards to the prevention and elimination of Pediculosis capitis.

There are several studies that support the results of this investigation. In a study by Udyakar et.al. on effectiveness of video assisted teaching programme on prevention of swine flu among students, it was concluded that the video assisted teaching was highly effective in increasing knowledge of students regarding prevention of swine flu.<sup>17</sup>

Another study by Van Acker, et al. on video education provided effective wound care instruction pre- or post-Mohs Micrographic Surgery. The conclusion stated that using a video education prior to or post-Mohs surgery served as an effective mechanism for patient education and improvement of time management in clinical practice.<sup>18</sup>

Lastly in the study by Ozer, et al. on web-based teaching video packages on anatomical education, revealed that web-based video packages were helpful, definitive, easily accessible and affordable which enabled students with different pace of learning to reach information simultaneously in equal conditions and increased the learning activity in crowded group lectures in cadaver labs.<sup>19</sup>

**Table 2: Knowledge scores of parents or guardians on management of pediculosis capitis**

	All n=175	Video assisted instruction n=89	Classical type instruction n=86	p-value
Scores in %, mean $\pm$ SD				
Pre-test	80 (20)	60 (30)	80 (20)	<0.0001*
Post-test	100 (10)	100 (10)	100 (10)	0.134
Mean difference $\pm$ SE	20 (20)	20 (30)	10 (10)	<0.0001*
Level of knowledge, n (%)				
Pre-test				
Adequate (75%-100%)	97 (55.4%)	33 (37.1%)	64 (74.4%)	<0.0001*
Moderate (50%-74%)	72 (41.1%)	52 (58.4%)	20 (23.3%)	
Inadequate (<49%)	6 (3.4%)	4 (4.5%)	2 (2.3%)	
Post-test				
Adequate (75%-100%)	166 (94.9%)	82 (92.1%)	84 (97.7%)	0.169
Moderate (50%-74%)	9 (5.1%)	7 (7.9%)	2 (2.3%)	
Inadequate (<49%)	-	-	-	
Change from pre-test				
Improved	70 (40.0%)	49 (55.1%)	21 (24.4%)	<0.0001*
Same	105 (60.0%)	40 (44.9%)	65 (75.6%)	



### C. Comparative Analysis

Out of the 175 participants, 166 were categorized with adequate knowledge on the management of Pediculosis capitis, 92.1% received the video assisted instruction and 97.7% received the classical type instruction ( $p=0.169$ ). Demographic characteristics of both groups were comparable with respect to gender, age and educational attainment. There was insufficient evidence to correlate level of knowledge gained with regards to gender ( $p=0.211$ ), age ( $p=0.783$ ) and education ( $p=0.292$ ).

Likewise, in the study by Victor Mlambo, on the analysis of some factors affecting student academic performance in an introductory biochemistry course at the University of the West Indies concluded that gender, age, learning preferences, and entry qualifications did not cause any significant variation in the academic performance of students.<sup>20</sup>

**Table 3: Parents or guardians with adequate level of knowledge by gender, age and**

	All n=166	Video assisted instruction n=82	Classical type instruction n=84	p-value
Gender, n (%)				
Male	11 (6.6%)	3 (3.7%)	8 (9.5%)	0.211
Female	155 (93.4%)	79 (96.3%)	76 (90.5%)	
Age in years, mean $\pm$ SD				0.783
Age group in years, n (%)				
18 – 29	60 (36.1%)	31 (37.8%)	29 (34.5%)	
30 – 39	51 (30.7%)	23 (28.0%)	28 (33.3%)	
40 – 49	36 (21.7%)	17 (20.7%)	19 (22.6%)	
$\geq 50$	19 (11.4%)	11 (13.4%)	8 (9.5%)	
Educational attainment, n (%)				0.292
Elementary	25 (15.1%)	12 (14.6%)	13 (15.5%)	
High school	116 (69.9%)	54 (65.9%)	62 (73.8%)	
College	25 (15.1%)	16 (19.5%)	9 (10.7%)	

### CONCLUSION

Pediculosis capitis remains to be a perennial problem among different communities, especially in children. Many of the treatments are geared over home remedy that oftentimes lead to frustration and difficulty in treating lice.<sup>21</sup>

The research has identified the efficacy of video assisted instruction in enhancing the knowledge on the management of Pediculosis. There was a significant increase in the knowledge of the participants from baseline to

post-intervention. Although both the video assisted instruction and classical type instruction both improved the knowledge of the participants, there was a greater increase in the video assisted instruction group. This finding tells us that video assisted instruction may provide an alternative method of instructing our patients with regards to the treatment of this condition and may affect better understanding on the proper handling and care of such cases.

## RECOMMENDATION

Since Pediculosis capitis is highly transferable and contagious, the researcher recommends that even at the barangay level, the video assisted instruction maybe utilized in educating the people in the community concerning hygiene and the alleviation or if possible total eradication of Pediculosis capitis. This will facilitate the information dissemination on the program.

Creating a program using the video assisted instruction by the barangay officials can also increase awareness and education on the treatment of Pediculosis capitis. This can also be extended to schools via the teachers and administrators, since the most commonly affected population are children.

The video assisted instruction can be further improved by adding subtitle in Filipino or dubbing it with Filipino or local dialect. The subtitle will facilitate better understand and enable those with hearing difficulties to understand the instruction in the video. It can also help by providing a sign language add-on in the video for those who are unable to understand the subtitle and audio. The video can be modified based on the setting and population where it will be administered. It has been proven in studies that instructions that have been contextualized provide a higher degree of learning.

Uploading the video over the internet will provide larger audience. With our current technology, the process of uploading the video over the internet can be so easy and the result will exponentially increase viewers. The ease of downloading the video and sharing it is a factor that can multiply the number of people that can be educated.

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