# DETECTION OF PINWORM (ENTEROBIUSVERMICULARIS) EGG AMONG CHILDREN AGED 3-7 YEARS IN TAGUMPAY, RIZAL USING PERIANAL SWAB METHOD

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**ABSTRACT**

The aim of this study is to detect *Entorobiusvermicularis* egg among children aging from three to seven years old using perianal swab method.The study was carried out in the community of Tagumpay, Rizal.The researchers did house to house visitation and asked parental consent for their children to collect specimen.One hundred twenty (120) children were selected. Swabbing was conducted the following week after the dissemination of information. The slides were examined under the microscope at the Microbiology and Parasitological laboratory of the New Era University. The data werestatistically analyzed using One-Way Analysis of Variance.

The results showed that forty (40) children, were positive and eighty (80) of them were negative out of one hundred twenty children(120) that were tested for the probable presence of *E.vermicularis*egg. In terms of age,7 years old have the highest number of cases with a total percentage of 27.5% followed by 5 years old with 22.5%,3 and 6 years old with 17.5% and 4 years old having the least number of cases with a percentage of 15.In terms of gender,males have higher cases of *Enterobiusvermicularis* egg wherein 52.5% of them were infected out of the forty(40) positive children.in terms of location, children who live near garbage have the highest number of cases,having a total percentage of 55% followed by along busy streets with 27.5% and well maintained area with 17.5%.

There are no significant differences on the presence of *E.vermicularis*egg on childrenin terms of age and gender. In terms of location, there is no significant difference on the presence of *E.vermicularis*egg on children.

**Keywords**: *Enterobiusvermicularis*,enterobiasis,pruritis, perianal swab method.

## INTRODUCTION:

Pinworm (*Enterobiusvermicularis*) infections are extremely common. They occur most frequently in children between 5 to 10 years of age and in all socioeconomic groups. However, human to human spread is prevalent in close crowded living conditions. The most common symptom of pinworm is itching in the rectal area. Symptoms are worst at night when the female worms are most active and crawl out of the anus to deposit their eggs. Although pinworm infections can be annoying, they rarely cause serious health problems and usually not dangerous. The most significant pathologic conditions are produced by gravid females that migrate from the anus onto the perianal and perineal skin to oviposit, causing a crawling sensation and pruritis. This condition results in scratching the area at times and cause scarification (Beaver et al., 1998).

Pinworms are types of little worms that commonly infect the intestines, often kids. Many of the kids in school have probably had pinworms at one, and the worms are nothing to be afraid of. Pinworms are really small-about as long as a staple. Their eggs get into the body through the mouth, and they pass through the digestive system. The eggs hatch in the small intestine, and the baby worms grow and move on to the large intestine. There the pinworms cling on to the wall of the intestine. After a few weeks, the female pinworms move to the end of the large intestine and they come out of the body at night to lay their eggs around the anus. The amount of time that passes when someone swallows the eggs until the worm laid new eggs is about 1-2 months. Pinworm eggs can end up on anything that someone who has pinworms touches on a counter in the kitchen, in a bed, or on a desk in the school. The eggs also can be on clothes, by touching them and putting on your fingers in the mouth. Children can swallow the eggs without knowing it. They get pinworms easily because they spend a lot of time with other kids who may have pinworms. They might touch something with pinworms eggs on it when they are playing with other kids and by putting their hand in their mouths, unknowingly eat the eggs. The eggs are so light that a few many even end up in the air, where they could be swallowed when you breathe the air in. This is not a common way of getting pinworm, though.

A pinworm is a white thin worm of about ¼ inch long that moves and does not wiggle. Pinworms can usually be seen in the anal and buttocks areas at night or early in the morning. Sometimes a pinworm is found on the surface of feces after a bowel movement. More than 10% of the children have pinworms. They do not cause any serious health problems. However they can cause much itching and irritation of the anal area and the bottom (Lagasse et al., 2008).

Pinworm eggs are spread directly on person to person. They can also be spread by touching bedding,food,or other things contaminated with the eggs. Typically,children are infected unknowingly touching pinworm eggs and putting their fingers in the mouth. The eggs are swallowed, and eventually hatch in the small intestine. The worms mature in the colon. Female worms then move to the child's anal area especially at night and deposit more eggs,this may cause intense itching. The area may evenbecome infected. When the childscratches the itching anal area, the eggs can get under the child'sfingernails. These eggs can be transferred to the other children family members and items in the house (Kiegman et al., 2007).

Children are more commonly infested than in adults. Adult pinworms inhabit and mate in the ceacum of the large intestine and adjacent areas. When mature females become gravid they Migrate down the colon and out onto the skin around the anus where they lay about 10,000 eggs and die. Such movements cause intense anal itching. Theeggs are infective within a few hours and are easily spread by hands to the mouth,most often through touching contaminated households objects or food supplies.If infective eggs are swallowed the young worms hatch in the duodenum and migrate into the caecum. Development from ingested egg to gravid female requires 2 months.the most prominent symptom of the disease resulting from pinworm infestation,called **enterobiasis**,is anal itching, particularly at night;restlessness and insomnia are common,and sometimes gastrointestinal symptoms such as abdominal pain,nausea and diarrhea are also present(Lagasse et al., 2008).

Positivity of scotch tape anal swab for ova of *Enterobiusvermicularis* is a very important landmark and tool evaluating the epidemiological characters of pinworm infecting a community and clinical diagnosis of infected individuals because no other approaches are readily available now.Hence,the study was conducted to detect the probable presence of *Enterobiusvermicularis* eggs among the children at a certain area aged 3-7 in Tagumpay Rizal through the use of perianal swab method.

## MATERIALS AND METHODS:

### TEST SUBJECTS:

The study was carried out in the community ofTagumpay Rizal. The researchers did house to house visitation and asked parental consent for their children to collect specimen. One hundred twenty (120) children were selected.

**PERIANAL SWAB METHOD:**

The subjects who went through the tape test were informed about the time of swabbing so that they would prepare themselves for the collection of specimen. Theswabbing was done one week after the dissemination of information. The specimens were collected using the sticky side of the tape with 3 inches by attaching the scotch tape at the perianal region of the children. The scotch tape is then placed onto a clean slide and observed under the microscope at Microbiology and Parasitology Laboratory.

**ANALYSIS OF SLIDES AND DATA COLLECTION:**

One hundred twenty slides were observed in the Microbiology and parasitologicalLaboratory of the New Era University. The data that were collected focused on the following:**a)** total number of children positive for the presence of eggs;**b)**total number of children positive on the presence of eggs based on age,gender and location; **c)**statistical treatment of each variable for the presence of *E.vermicularis*eggs. The data were statistically analyzed and evaluated using one way analysis of variance. The level of significance was set at .05 with f distribution of 7.71.

**RESULTS AND DISCUSSIONS:**

The research study entitled "Detection of *Enterobiusvermicularis* (pinworms) egg among children aged 3-7 in Tagumpay, Rizal using Perianal Swab Method" has the following results in terms of their gender, age and environment. The descriptive type of method was undertaken to determine and evaluate the presence of *Enterobiusvermicularis* egg randomly tested on children into 3 variables: age, gender and its location. Microscopic examinations of the slides showing positive results as an indication of the presence of eggs were also presented in figure 1-16.

**Table 1 Probable Presence of *Enterobiusvermicularis* Egg Among Children Aged 3-7 Years**

| Variables | + (positive) | | | - (negative) | | | RANK |
|---|---|---|---|---|---|---|---|
| **AGE** | ***f*** | ***Rf*** | ***Pf*** | ***f*** | ***Rf*** | ***Pf*** | |
| **3** | 7 | 0.715 | 17.5% | 21 | 0.2625 | 26.25% | **4** |
| **4** | 6 | 0.15 | 15% | 12 | 0.15 | 15% | **5** |
| **5** | 9 | 0.225 | 22.5% | 9 | 0.1125 | 11.25% | **2** |
| **6** | 7 | 0.175 | 17.5% | 17 | 0.2125 | 21.25% | **3** |
| **7** | 11 | 0.275 | 27.5% | 21 | 0.2625 | 26.25% | **1** |
| **TOTAL** | **∑f=40** | **∑Rf=1.000** | **∑Pf=100** | **∑f=80** | **∑Rf=1.000** | **∑Pf=100** | |
| **GENDER** | ***f*** | ***Rf*** | ***Pf*** | ***f*** | ***Rf*** | ***Pf*** | |
| **F** | 19 | 0.475 | 47.5% | 41 | 0.5125 | 51.25% | **2** |
| **M** | 21 | 0.525 | 52.5% | 39 | 0.4875 | 48.75% | **1** |
| ***TOTAL*** | **∑f=40** | **∑Rf=1.000** | **∑Pf=100** | **∑f=80** | **∑Rf=1.000** | **∑Pf=100** | |
| **LOCATION** | ***f*** | ***Rf*** | ***Pf*** | ***f*** | ***Rf*** | ***Pf*** | |
| **Area 1** | 11 | 0.275 | 27.5% | 29 | 0.3625 | 36.25% | **2** |
| **Area 2** | 7 | 0.175 | 17.5% | 33 | 0.4125 | 41.25% | **3** |
| **Area3** | 22 | 0.55 | 55% | 18 | 0.225 | 22.5% | **1** |
| **TOTAL** | **∑f=40** | **∑Rf=1.000** | **∑Pf=100** | **∑f=80** | **∑Rf=1.000** | **∑Pf=100** | |

Table 1 shows that there is a presence of *Enterobiusvermicularis*egg randomly tested on children aged 3-7 years old using perianal swab method. Distribution frequency (f), relative frequency (Rf) as well as the percentage frequency (Pf) were constructed to evaluate the data of each value and ranked them from the highest to lowest. Each value represents the positive and negative result of the study.

In terms of age, it shows that the most infected age is 7 with a percentage of 27.50% and ranked as number 1. In terms of gender, male has the highest number who got positive with *Enterobiusvermicularis*with a percentage of 52.5%. In terms of location, Area 2 has the least number of children who got positive with 17.5% and result shows that Area 3 has the highest number of infected children of Enterobiusvermicularis with 55%.

Therefore, computation rejects null hypotheses and there is a presence of *Enterobiusvermicularis*egg randomly

tested on children aged 3-7 years using perianal swab method.

**Table 2: Significant Differences of *Enterobiusvermicularis* Egg on Children Using Perianal Swab Method in Terms of Age, Gender and Location**

| Variables | + (positive) | - (negative) | TOTAL |
|---|---|---|---|
| **AGE** | | | |
| **3** | 7 | 21 | 28 |
| **4** | 6 | 12 | 18 |
| **5** | 9 | 9 | 18 |
| **6** | 7 | 17 | 24 |
| **7** | 11 | 21 | 32 |
| **TOTAL** | **40** | **80** | **120** |
| | | | |
| **GENDER** | | | |
| **Female** | 19 | 41 | 60 |
| **Male** | 21 | 39 | 60 |
| **TOTAL** | **40** | **80** | **120** |
| | | | |
| **LOCATION** | | | |
| **Area 1** | 11 | 29 | 40 |
| **Area 2** | 7 | 33 | 40 |
| **Area 3** | 22 | 18 | 40 |
| **TOTAL** | **40** | **80** | **120** |

Table 2 shows significant differences on the presence of *Enterobiusvermicularis* egg in terms of age. Computation for chi-square shown in 2.1 shows that age represents the following: $fe_1$ to $fe_5$ for the positive result and $fe_6$ to $fe_{10}$ for its negative results. The Computed Value(CV) is 3.33 and is less than the Tabular Value (TV)with 9.49, this means that the null hypotheses is accepted and there is no significant differences of *Enterobiusvermicularis* egg in terms of age.

**Table 3: Significant Relationships on the Presence of *Enterobiusvermicularis* Eggs in Terms of the Location of Their Houses Such as Along Busy Streets,Maintained Area and Near Garbage.**

| LOCATIONS | $x_a$ | $x_b$ | $x_a^2$ | $x_b^2$ |
|---|---|---|---|---|
| | + | - | $+^2$ | $-^2$ |
| **Area 1** | 11 | 29 | 121 | 841 |
| **Area 2** | 7 | 33 | 49 | 1089 |
| **Area 3** | 22 | 18 | 484 | 324 |
| **TOTAL** | **40** | **80** | **654** | **2254** |
| | **120** | | **2908** | |

**Table 3.1: Analysis of Variance**

| Source of Variance | Sum of Squares | Degree of Freedom | Mean of Sum of Squares | F Comp | F Tab at 0.05 |
|---|---|---|---|---|---|
| **Between-column** | 266.6666667 | 3-1 = 2 | 133.3333333 | 1.66 | 9.55 |
| **Within-column** | 241.3333333 | 5-2 = 3 | 80.4444443 | Decision: | |
| **TSS** | **508** | **5** | | **accept Ho** | |

Table 3 shows the significant relationships on the presence of *Enterobiusvermicularis* eggs in terms of the location of their houses such as along busy streets, maintained area and near garbage.
The result of the computation using ANOVA test in Table 3.1, shows that the Computed Value (CV) 1.66 is less than the Tabular Value (TV), with 9.55 at 0.05 level of significance, which means that there are no significant

relationships on the presence of *Enterobiusvermicularis* eggs in terms of the location of their houses such as along busy streets, maintained area and near garbage.

**MICROSCOPIC ANALYSIS**


Figure 1. Slide # 2

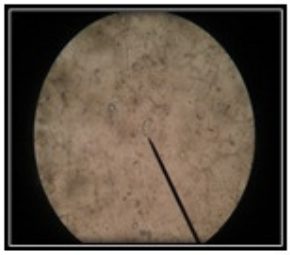
Figure 2. Slide # 3

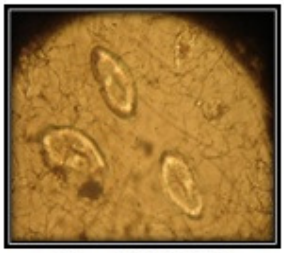
Figure 3. Slide # 6

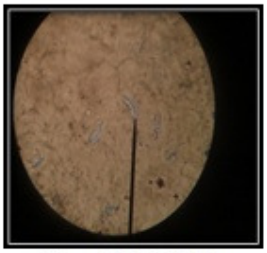
Figure 4. Slide # 10

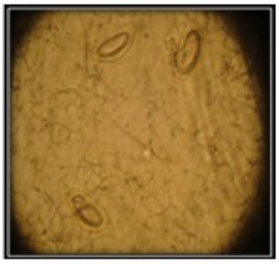
Figure 5. Slide # 12


Figure 6. Slide #17

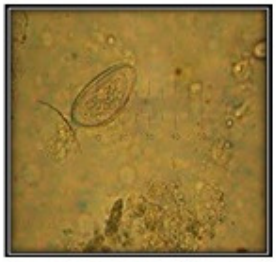
Figure 7. Slide # 22


Figure 8. Slide # 28

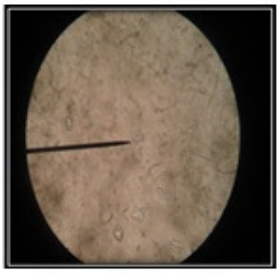
Figure 9. Slide # 31

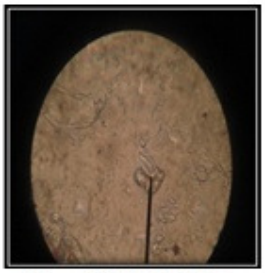
Figure 10. Slide # 35

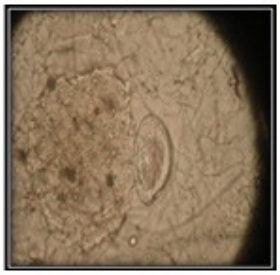
Figure 11. Slide # 38

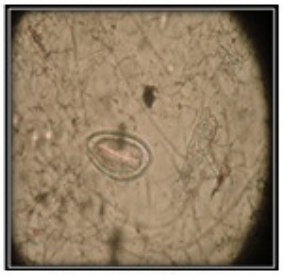
Figure 12. Slide # 10

## CONCLUSIONS AND RECOMMENDATIONS:

Based on the study, it was concluded that there is no significant difference on the rate of infection between boys and girls, there is no significant differences in the infection rate among 3-7 years old and there is no significant infection rate based on the location of the subjects.

Several recommendations were given and these includes;**(1)**children who were infected with *Enterobiusvermicularis*should undergo deworming process through their parents or by seeking advice from a medical Doctor;**(2)**treatments and preventative measures might include practice good hygiene;**(3)**cleanliness of the surroundings should be maintained especially in the playing area to avoid infection.

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