

PAPER • OPEN ACCESS

## Worm Disease Profile of Primary School Children

To cite this article: Hartati *et al* 2018 *IOP Conf. Ser.: Mater. Sci. Eng.* **296** 012009

View the [article online](#) for updates and enhancements.

### Related content

- [Formative Assessment Models and Thinking Styles in Learning History](#)  
Patahuddin
- [Chronic diarrhea caused by Blastocystis hominis and Cryptosporidium sp. in immunocompetent patient-a case report](#)  
Y Andriyani, M F Rozi, R H Saragih et al.
- [Arbi Care as an Educational Game to Improve Knowledge in Diarrhea Prevention among Preschoolers](#)  
Arbianingsih, Nur Hidayah, Huriati et al.

# Worm Disease Profile of Primary School Children

Hartati, Destriani and A R Victoria

University of Sriwijaya

hartati@fkip.unsri.ac.id

**Abstract.** The result of an elementary study of relations between disease symptoms and signs with the wormy occurrence child at Elementary School in Ilir Barat II Subdistrict of Palembang in concerned in this research amount to 200 people from the population of 4200 people of a child in elementary school. The result indicates that the child roommates infested worm marked with a few symptoms like passion eat to Decrease the puking pain in the home of stomach after eating, diarrhea, defecate with the mucus and bleed the purities at the anus before controlled from some worm type of there no difference having a meaning between child roommates worm infested with the child roommates do not infest worm ( $P > 0.05$ ). Symptom vomit got more amount by having a meaning a child by infested is *Trichuris* ( $RO > 2.669$ ,  $P < 0/005$ ). The result of infested *Trichuris* generate the more amount of symptoms lust to eat to Decrease by having a meaning of Compared to the which do not infest *Trichuris* ( $RO = 3.772$ ;  $CI\ 95\% = 1.214$  to  $11.726$ ;  $P = 0.016$ ) symptoms lust to eat to Decrease and more amount diarrhea got at Infest oxyuris with the special sign of purities at nighttime anus ( $RO = 0.557$ ;  $85\% CI = 0.166$  to  $2.168$ ). The risk of the happening of unfavorable nutrition According to  $BB / U$  and Also  $TB / U$  growing niche to more amount (having a meaning) at child roommates worm infested by a child Compared to the which do not infest worm.

## 1. Introduction

Worm disease prevalence is very high, especially in the tropical and sub-tropical. This disease is the cause of much pain in the world. Three and a half billion people globally are infected with intestinal parasites, including roundworm (*Ascaris lumbricoides*, *Thricuris trichuira*, *Ancylostoma duodenale*, *Necator americanus*). Four hundred and fifty million of them on children [1]. Around the world an estimated 1.47 billion *lumbriocides Ascaris-infected* children, *trichuira Thricuris* interference 1.3 billion and 1.05 billion infected with hookworm *Ancylostoma duodenale Necator* [2]. The prevalence of worm diseases in Indonesia is still quite high at 30.4% for *Awaris lumbriocides*, 21.25% and 6.5% *Thricuris trichuira Necator americanus* and *A-flycostoma duodenale* [3,4]. In Indonesia, the worm disease is most of the health problems after malnutrition. The prevalence and the highest intensity found among children of primary school age [5]. The prevalence among primary school children the province (Sum-Cells, Jakarta, and Yogyakarta) in Indonesia is 12.9% percent to *Ascaris lumbricoides* to *thricuris tricuire* 19.8% and 7.8% for hookworm [3]. According to the World Bank development report, in developing countries is estimated between 5-14 years old girls worm disease is 12% of the total morbidity burden (boys 11%); therefore the worm is the largest single contributor to the burden of illness in this age group, [3]. Worms including macroparasites, which means that parasite from multiplying in the body of its host [6]. Therefore, the infection is not the same as the disease. Pain directly related to the intensity of infection, so most of its host, especially with worm infestation depends on the parasite (virulence and number) and the host (immune factors) so that the child is healthy with good nutrition



can suffer infestation of light without clinical manifestations altogether worm infestation can heavily cause symptoms in healthy children while clinical symptoms in mild clan moderate infestation will appear in children with malnutrition or malnutrition [2].

The learning achievement of primary school children, one of which is influenced by physical factors, especially a disease - a disease that causes disruption consent. According to Watkins and Pollit [6], the disruption caused by the symptoms of the disease will engage worm learning concentration. Keller, Casparis and Leather (1931) as quoted Watkins (1997), conduct cross-sectional study in children whites and Hitman in Tennessee that have economic and sanitary conditions are similar. White child infested caring to give the experience more discomfort in the abdomen (70% vs 7%), sleep disorders (60% vs. 15%), dental Gigis (32% vs. 11%) and tiredness (27% vs 7 %) compared with the control group. This situation will engage learning achievement of children in primary school [5].

Given the primary school children provide human resources in the future, and learning achievement is also greatly influenced by physical factors, then it is necessary to identify the symptoms associated with worm infestation can disrupt the concentration of children's learning.

## 2. Methods

The study ran between April 2013 - June 2013 in the District of Ilir Barat II Palembang, South Sumatra. This study is part of a research relationship between infestation and academic achievement of elementary school children in the same place. Based on the estimated prevalence of worm infestation among Naak-school base in Indonesia is 40% (P) and accuracy relative to expect 7% (d),  $\alpha = 0.005$ ,  $Z = 1.960$ , then the required number of samples of at least 188 primary school children (Pollitt E, 2006; 123). In this study, the number of subjects included 200 children who were randomly selected from the 4200 primary school children in the District of Ilir Barat II Palembang, South Sumatra. The method of randomization using a random table, by means of simple randomization [7].

Stool elementary school children have collected feces when, because of the presence of worm eggs in the stool is not affected time [1]. Stool elementary school children were collected stool while. Measurement with fecal worm egg examination by the direct method using eosin staining (2% in distilled water) and viewed under a microscope with 10 times magnification objective lens. Test results indicated by the presence or absence of worm eggs (qualitative). Examination of the worm eggs done by a senior laboratory technician at the General Hospital Muhammad Hoesin, who had attended a refresher course one year ago at Airlangga University, Surabaya.

Signs measured worm disease is nutritional status. The nutritional status was determined by anthropometric, i.e. by measurement of weight and height. Body weight was measured using a spring balance stand (*spring scale*) scale 0-100 kg that has been calibrated using the known weight of goods. The accuracy of measurement up to 100 g. measure height by using microtome, the vertical board with a headwind standard gauge (0-200 cm) and a horizontal board for limiting head. Measurement accuracy up to 0.1 cm. so measurement results or height compared with the standard WHO-NCHS based on the age of the child. Nutritional status was measured by weight loss of weight/age (W/A) and height/age (H/A) and expressed as a percent to avoid a *recall/anamnestic* bias, noting complaints symptoms last for 1 month only. Interviews were conducted with mother's pupil with a guided questionnaire. Symptoms are asked is decreased appetite, abdominal pain after eating, diarrhea, vomiting, cough with pull worms, worms secrete big bowel, bowel movement with blood and itching in the anus.

Statistical analysis of the relationship between symptoms and signs of disease with an incidence wormy worm using chi-square test and risk analysis research results [8].

## 3. Research result

Of the 200 subjects studied, two subjects were not analyzed because the data is incomplete. Hookworm infestation was not analyzed because the number of subjects was only two.

Worm infestation is characterized by the presence of some symptoms and signs such as lack of appetite, vomiting, abdominal pain after eating, diarrhea, irritable bowel out worms, cough out worms, bowel movements with mucus and blood and itching in the anus. Given some of the symptoms can be owned by more than one type of worm, then the control of the respective types of worms. Both before

and after controlling for each type of worm, gekada, and signs of disease in children infested worm was not significantly different compared with that not trifactas ( $p > 0.05$ ). Vomiting obtained more significantly in children with *Trichuris* infestation (RO = 2.669,  $p < 0.05$ ). After *Ascaris* infestation is not included in the analysis, showed that *Trichuris* infestation nagsu cause more symptoms of eating was significantly reduced compared to non-infested *Trichuris* (RO = 3.772; IK95% = 1.214 to 11.726;  $p = 0.016$ ).

In Sisko analysis, although inconclusive, it was found that some of the symptoms and signs of disease are more prone to worms found in children infected with worms (odds ratio  $> 1$ ) (Table 1, 2, 4 and 4). Symptoms that can be associated with *Ascaris* infestation is diarrhea and bowel movements issued a worm. *Trichuris* centering provide more symptoms of lack of appetite vomiting, abdominal pain after eating, diarrhea and bowel movements and diarrhea more obtained at *Oxyuris* infestation. *Oxyuris* Khai symptoms in the form of itching in the anus at night time is not a distinctive mark in this study (RO = 0.553, IK95% = 0, from 166 to 2.168). Symptoms of bowel movements with blood which can occur at *Trichuris* infestation by removing the worm clan cough symptomatic ticlak *Ascaris* infestation was found in the study sample population. The risk of malnutrition, according to both W/A and H/A, were more likely to be obtained on worm infestation. In fact, at the risk of *Ascaris* infestation, undernourishment based TB/U more significantly than those who are not infested. In *Oxyuriasis*, the risk of malnutrition based TB/U cannot be rated as one of the cell number zero.

#### 4. Discussion research

Some of the symptoms and signs associated with infestation showed an increased risk even if the results are inconclusive (RO  $> 1$ , IK95% passing 1). The results are inconclusive can associate with less specific symptoms and signs of worm disease, because it can be caused by other diseases are also often suffered by children of primary school age

Decreased appetite tends to be more common in children with *Trichuris* infestation and *Oxyuris* on *trichuriasis* are significant differences, *Trichuriasis* is the most many give symptoms than those lain. Indication of worm infestation is a lack of appetite, vomiting, diarrhea, abdominal pain after eating and defecating issue a worm. These results are more or less according to a case report in Yogyakarta (1998) and in Jakarta (2000). In a series of 81 reports of cases without complications *trichuiura Trichuris* infestation in Yogyakarta (1997), obtained the most frequent symptoms are an epigastric pain, lumbar and abdominal muscles, vomiting, constipation, abdominal distension, bloating and systemic intoxication [7].

Decreased appetite *Oxyuris* infestations associated with children less rest at night [2]. But often also associated with behavioral disorders, such as low self-esteem, anxiety, cannot concentrate, hyperactivity and others. In this study, the symptoms of itching in the anus at night can be connected with *Oxyuriasis* with IK 95% to RO = 0.166 to 2.168.

*Ascaris* infestation more at risk to cause diarrhea and wasting large are issued worms, while the symptoms of abdominal pain after eating, which, according to Faust et al [9] is the most frequent complaint in *Ascaris* infestation, were inconclusive (Table 3). Diarrhea occurred in *Ascariasis* can be caused by reduced absorption in the intestine as a result of the surface covered by a mass of *Ascaris* in the bowel lumen.

In this study, although inconclusive, children with worm infestation have more risk for malnutrition (RO for undernourished  $< 1$ , IK95% including 1). These results are consistent with research Hadju et al. (2007) who get the relationship between the incidence of infestation with a decrease in good nutritional status based on BB/U and TB/U. Reviewed obtained *Ascaris* infestation is improving nutritional status by TB / U after deworming, the cross-sectional study that did Hadju et al [10].

According as quoted by Watkins and Pollitt [7,11], the incidence of undernourishment on worm infestation can be explained in several ways: (a) the direct consumption of nutrient, (b) digesting the blood or intestinal bleeding, which causes loss of iron and nutrient other, (c) malabsorption usu against the carbohydrate, protein and fat, (d) *protease inhibitors*, generated worm to protect yourself from digestive enzymes would reduce the uptake of amino acids, and (e) respoons immune to infection, which

causes loss of nutrients (proteins of immunoglobulins, lymphocytes, and other inflammatory cells) were anorexia.

## 5. Conclusion

- Although inconclusive, children with worm infestations tend to be more experienced and tana worm disease symptoms than children who are not infested,
- Children with Trichuirs trichiura infestation significantly showed a higher risk of experiencing symptoms of vomiting and lack of appetite,
- Children with Ascari asis has a greater risk of experiencing chronic undernourishment.

## 6. Suggestion

Eradication program in order to be considered for inclusion in the school health program in primary schools. An educational program of parents, especially mothers and dissemination of information about worm diseases incorporated into the worm eradication program in elementary school.

## References

- [1] WHO 2008 *Physical status: the use interpretation of anthropometry* (Genewa)
- [2] WHO 2010 *Epidemiological data of intestinal parasites, WHO. World development report: Investing in health* (New York: OXFORD University Press)
- [3] Miraza EM G 2005 Parasitic infestation in children at the three kindergartens in Medan, North Sumatera, pediatric Indonesia 312
- [4] Indrawati V 2005 *Suplementasi zat besi dan asam folat serta riboflavin terhadap pengkatan kadar Hb yang mempengaruhi konservasi belajar anak sekolah dasar* (Surabaya: Pasca Sarjana Universitas Airlangga)
- [5] Adriani M and Wijatmadi B 2012 *Pengantar Gizi Masyarakat* (Jakarta: Kencana Prenada Media Group)
- [6] Smith G, Basanes M G and Dietz K 1995 *Macroparasite group report: problem in modelling the dinamic of macropasitic system* (Cambridge, UK: Cambridge University Press)
- [7] Pollitt E and Marthew R 2006 Breakfast and cognition: an integrative summary *Am. J. Clin. Nutr.* 123
- [8] Sastroasmoro S and Ismael S 2005 *Dasar-dasar penelitian klinis* (Jakarta: Bagian ilmu kesehatan anak FKUI)
- [9] Faust K, Sathirapongsasuti J F, Izard J, Segata N, Gevers D and Raes J 2012 Microbial Co-occurrence Relationships in the Human Microbiome
- [10] Hadju V, Stephenson L, Abadi K, Mohammed H, Bowman D and Parker R 2007 Improvement in appetite and growth in helminth-infected schoolboys three and seven weeks after a single dose of pyrantel pamoate, parasitology *pubmed.gov*
- [11] Watkins W E and Pollit E 1997 Stupidity of Worm: do intestinal worm impair mental performance? *Psychol Bull* **121** 171–91