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RESEARCH ARTICLE

A CROSS SECTIONAL STUDY ON INTESTINAL PARASITIC INFECTION AND ANAEMIA AMONG SCHOOL GOING CHILDRENS

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ABSTRACT

Intestinal parasitic infection are one the neglected tropical diseases listed by (WHO). They play a major role among all reasons to cause significant iron deficiency anemia and malnutrition especially among school going children located in rural areas. Our study mainly conducted to estimate the prevalence of intestinal parasitic infection and iron deficiency anemia among school going children. The main aim is to determine the prevalence of intestinal parasitic infection and also to correlate their comorbidities among school going children. A cross sectional study for one year was conducted at a tertiary care hospital which included school going children. In this study, 120 school going children was screened for intestinal parasitic infection and anemia. The stool examination was done by wet mount to detect the presence of ova/cyst and Hb% estimation by using XT 1000i. This 120 study participants with 56.6% boys and 43.3% girls were enrolled. The prevalence of intestinal parasitic infection is 7.5%. *Entamoebahistolytica* is the predominant protozoal parasite (33.3%) followed by hookworm (44.4%) and *Hymenolepis nana* (22.2%). Presence of anemia in present study population was 94.16%. To conclude, since intestinal parasitic infection can be controlled by following a few healthy hygienic practices like regular deworming, awareness on handwashing technique, intake of iron and folic acid supplement irrespective of the nutritional status, usage of proper toilets can reduce the incidence of iron deficiency anemia caused by intestinal parasitic infection in school going children.

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INTRODUCTION

In India, intestinal parasitic infection and anemia remain the most important cause of morbidity especially among the school going children due to lack of awareness of personal hygiene practices, leading to intestinal parasitic infections which could in turn lead to anemia (Anemia, 2018). Depending on the parasite, one or multiple body sites maybe infected , resulting in no or few symptoms or, at the other extreme , death (Sarvepalli Vijaya Kumar, 2019) .The intestinal parasitic infection is a neglected tropical disease listed by World Health Organization (WHO) (WHO, 2011). The common parasitic infections reported globally are *Ascarislumbricoides* (20%), Hookworm (18%), *Trichuristrichura* (10%) and *Entamoeba Histolytica* (10%). Anaemia is one of the common illness affecting most of the school going children (WHO, 2019). The causes maybe multi-factorial in different age groups ranging from congenital disorders in neonates to malignancy in older age group.

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Globally as per the WHO statistical data, the prevalence of anaemia among school going children ranges from 12-60% (Sarvepalli Vijaya Kumar, 2019). The consequences of anaemia among school going children results in lowered resistance to disease , increased susceptibility to infection , poor cognitive development, poor school performance and reduced work capacity with impaired social and economic development of the country (<https://www.cdc.gov/dpdx/diagnosticprocedures/stool/index.html>). The disease caused by helminthic parasites are called helminthiasis, and it can impair the nutritional status of those affected by causing intestinal bleeding, loss of appetite, diarrhoea and reducing the absorption of micronutrients. These infections are highly prevalent in the tropical and subtropical region where there is lack of adequate water supply and proper sanitation facilities (Dhanabal, 2014). The diseases caused by intestinal protozoan parasites are associated with diarrhoea and dysentery (District Laboratory practices in Tropical Country).

Objective of the Study: The purpose of the study was to find out incidence of intestinal parasitic infection in children and to correlate the health impact of children by assessing

hemoglobin levels in a tertiary care hospital in Kancheepuramdistrict (South India), in a period of about twelve months, from January 2019 to January 2020.

Scope of the Study: The results of the study can be used to impementregular deworming practices, awareness regarding hand washing,iron and folic acid supplementation irrespective of the nutritional status and hygiene health education could reduce the incidence of parasitic infection and anaemia in school going children.

MATERIALS AND METHODS

This was a Cross-sectional study conducted on 120school going children who belongs to moderate and severe anemia group. Institutional Ethics Committee has authorized this study (1583/IEC/2018 on 27.02.2019). Stool samples was collected in clean, properly labelled and leak proof universal container with labelled Name, Age, IP/OP no: and Sex from children . All fresh specimens should be handled carefully because each specimen represents a potential source of infectious material. The specimen should not be contaminated with water, urine or disinfectants. Labelled containers are given one day prior to them, and asked to collect the specimen freshly in second day morning. A wet mount can be prepared directly from the fecal matter. Wet mount is usually prepared by using normal saline and lugol's iodine. This will reveal the helminth eggs, larvae, motile trophozoites and non-motile cysts. Pus cells, RBC's and bacteria is also observed.

Blood specimen: Under aseptic precautions, 2 millilitres of venous blood were obtained by routine phlebotomy procedure. The samples was collected in an Ethylene Diamine Tetra Aceitic Acid(EDTA) vaccutainer and analysed within 2 hours for Hb using XT 1000i(automated hematology analyser).

RESULTS AND DISCUSSION

In the present prospective study, a total of 120 school going children who fulfilled the inclusion criteria were enrolled. A clear male study population dominance with 68 boys (56.6%) and 52 girls (43.3%) were present. All the children were from age group 5-18 years. The stool samples were screened for all the children who is anaemic. According to the clinical characteristics of the study particepants, it was found that about 94.16% of the particepants is anaemic. The stool specimens was collected from school children and screened for parasite ova and cyst. On microscopic examination of stool samples, it was found that 7.5% of the participants had atleast one of the intestinal parasitic organisms. Among those whose were diagnosed with mild and moderate anaemia. The overall prevalence of intestinal parasitic infection in children is found to be 9 (7.5%) *Entamoebahistolytica* was the most common intestinal parasite in stool samples 4(44.4%), followed by hookworm 3 (33.3%) and *Hymenolepis nana*2 (22.2%). The study participants who was screened for intestinal parasite belongs to the mild, moderate and severe anaemia group which was classified by WHO. The prevalence was found to be as low as 11.4% in a study conducted by Kotianet al in Uttarkhand, On microscopic stool examination, *Entamoebahistolytica* and hookworm was the common parasite among the study group. Similar results were obtained in a study done by Sarvepallivijayakumaret al. From this study, it was found that prevalence of anaemia among school children was 101.94%.

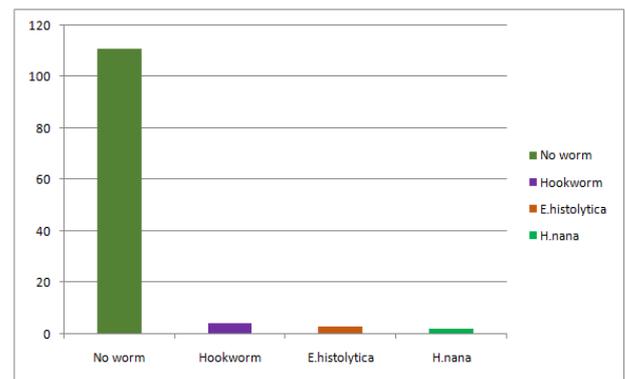


Figure 1. Distribution of parasite in study participants (n=120)

Clinical variable	Frequency (n= 120)	Percentage %
Anaemia		
Present (<12mg/dl)	113	94.16%
Absent (>12mg/dl)	7	5.84%
Presence of intestinal parasitic infection		
Present	9	7.5%
Absent	111	92.5%

Figure 2. Clinical characteristics of the study participants (n=120)

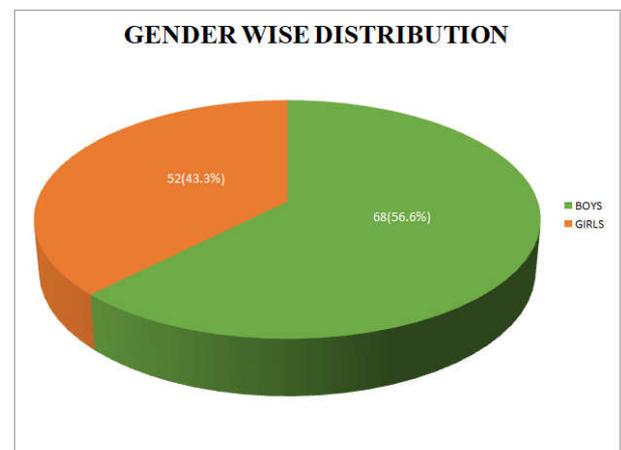


Figure 3: Gender wise distribution (n=120)

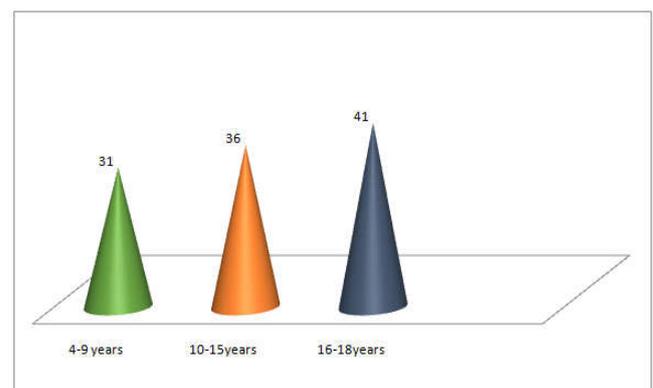


Figure 4. Age wise Distribution (n=120)

Similar results were obtained in studies conducted by Mandot and Bamnawat, Poyyamozhi *et al* where the prevalence rates were found to be 41.1%, 62% and 83.6% respectively. Any developing nation, which has a prevalence of anaemia more than 40% is categorized as of severe public health significance.

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Conflict of Interest: No Conflict of interest.

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