Intestinal parasitic infections among school children of the Dhahira Region of Oman

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ABSTRACT

Objective: To determine the prevalence of intestinal parasitic infections among primary school children in Dhahira region of Oman.

Methods: The study took place in the Dhahira region of Oman from September 2004 to March 2005. We randomly recruited 436 students of 9-10 years of age. Their anthropometric measurements were noted. We collected the stool sample of each student and examined for different intestinal parasites. Stereoscopic microscopy and the World Health Organization's approved KATO-KATZ technique were used.

Results: Of the 436 students examined, 65 children (15%) were undernourished (body mass index (BMI) <14 kg/m²). The prevalence of intestinal parasitic infections was 38.7% (95% CI 33.2 – 42.2). The prevalence of protozoan infection was 36% while helminth infection was 9.4%. The prevalence of Entamoeba histolytica/Entamoeba dispar was 24%, Giardia species 10.5% and Escherichia coli 1.4%. The hookworm (Ancylostoma duodenale, Necator americanus), Ascaris lumbricoides, Trichuris trichiura, Hymenolepiasis nana, Taenia species, Enterobius vermicularis, and Strongyloides infections in our study had very low prevalence. Only 29 (6.4%) students had parasitic infection by more than one parasite. The wet zone was significantly associated to the intestinal parasitic infections [Adjusted odds ratio (OR)=3.2 (95% CI 1.9 – 5.2)].

Conclusion: Dhahira region could be classified as low prevalence and low intensity area for soil transmitted helminths infections. However, the magnitude of the protozoan infection was high. The school health program should focus on parasitic infection treatment and addressing the underlying causes of this problem.
infections among primary school children in Dhahira
aim to find out the prevalence of intestinal parasitic
planners therefore conducted this study with the
have evidence based estimates of this problem. Health
guidelines, any health program aiming at controlling
involves microscopic examination of a fixed amount
The technique was later modified by Katz N in
areas. The WHO methodology,
plains that do not receive much rain
be divided into 2 ecologically homogeneous areas
October 2004 to March 2005. The study population
study conducted during school academic year 2004-
treated in the school.
the worm burden. All the children found to be positive
with appropriate drugs according to the stool sample
samples were transported immediately to the
These teams visited the schools and collected
workshop was held prior to the field part of the
Resident (CDSC) examined the stool samples. Presence of all
in the school.
and even included in the curriculum of
and primary education is free and mandatory. The
Arab Emirate their border sharing countries. It has a
landlocked region located in northwestern side of
and many wadis (water streams) exist.
September 2004 to March 2005. The field part of the study was carried out from
2005. The study area, Dhahira region is a
Methods.

The study was conducted with the consent of
regional health administrators. The verbal consents of
children of 9-10 years were listed. From these classes,
included these 14 selected schools, classes of minimum 30
in the first stage, from the 102 schools of the region, 7
The school health staff and sanitary inspector of the

The study area, Dhahira region is a

Methods.

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Results.

We examined 436 students of 14 schools consisting of 221 students (50.7%) from dry plain zone and 215 (49.3%) from wet hilly zone. Male students were 258 (59.2%) while 178 (40.8%) were female students. The majority of the students (375, 86%) were 9 years old. Approximately 15% of the children were undernourished (BMI<14 kg/m²). The mean height was 129.4 ± 5.6 cm and mean weight was 27.3 ± 5.9 kg. The well water that students consumed in 12 schools was supplied by water tankers. All the schools had canteen facility and sanitary toilets within the school premises.

The overall prevalence of intestinal parasitic infections was 38.7% (95% CI 33.2-42.4). The protozoan infection accounted 36% and 9.4% for helminths. The frequencies, prevalence with their 95% confidence intervals for different subgroup is given in Table 1.

Entamoeba histolytica/Entamoeba dispar (E. histolytica/E. dispar) (24.1%), Giardia species (10.5%) and Hymenolepiasis nana (H. nana) (5.9%) was the most common organisms isolated. The multiple infections are also common with intestinal parasites. Of the 436, 29 (6.4%) students were infected with more than one parasite, 27 (6.1%) with 2 parasites and 2 students had 3 types of parasites. Among 169 students with parasitic infections, the mean BMI was 26.7 ± 5.5 kg/m². In 267 students without parasitic infection, the mean BMI was 27.1 ± 6.3 kg/m². Thus, the difference of BMI in students with and without parasitic infection was not statistically significant (actual difference of mean = 0.46, standard error = 0.56).

The association of parasitic infection to different variables was reviewed through logistic regression Table 2. Wet zone had significantly higher risk of parasitic infections even after controlling for age, gender and wilayats group.

Discussion.

Intestinal parasitic infections in Al Dhahira region in this study were more than one third of 9-10 years old school going children. It is reported that by using the KATO-KATZ method, light infections may be missed and therefore the prevalence in our study could be an underestimate.

The overall prevalence was higher in our study compared to the studies in Turkey (31.8% and 22.4%5), Saudi Arabia (10.94%6 and 24.4%7), Gaza

Table 1 -

<table>
<thead>
<tr>
<th>Group variables</th>
<th>Examined samples</th>
<th>Parasitic infection N students</th>
<th>Prevalence (%)</th>
<th>95% CI</th>
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<tbody>
<tr>
<td>Gender</td>
<td></td>
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<tr>
<td>Age group</td>
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<tr>
<td>Zone</td>
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<tr>
<td>Type of parasites *</td>
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<tr>
<td>E. histolytica/E. dispar</td>
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<tr>
<td>Giardia species</td>
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<tr>
<td>E. coli</td>
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<tr>
<td>Strongyloides</td>
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<tr>
<td>A. lumbricoides</td>
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<tr>
<td>Hookworm</td>
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<tr>
<td>H. nana</td>
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<td>E. vermicularis</td>
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<tr>
<td>Taenia species</td>
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<tr>
<td>T. trichiura</td>
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<tr>
<td>Dhalira</td>
<td>436</td>
<td>169</td>
<td>38.7</td>
<td>33.2 - 42.4</td>
</tr>
</tbody>
</table>

Acknowledgments.

References

BMC Public Health

Strongyloides

Taenia

Giardia

Escherichia coli (E. coli)

E. histolytica/E. dispar

Acta Parasitologica Turcica

E. coli

BMC Public Health

J Egypt Soc Parasitol

Acta Trop

J Egypt Soc Parasitol

E. histolytica/E. dispar

Acta Trop

Korean J Parasitol

Public Health

Southeast Asian J Trop Med


