

## PREVALENCE AND ASSOCIATED RISK FACTORS WITH INTESTINAL INFECTION PRESENT IN THE STUDENTS OF ISLAMABAD PAKISTAN

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### ABSTRACT

The experiment was conducted to determine the presence of intestinal infections in the students of urban areas living in Islamabad. The physical health conditions of male as well as female students and the associated risk factors between intestinal infections and physical health conditions among the male and female students were studied in government setup. First we were given the instructions about the use of deworming medicine to control the harmful parasites, then check their physical conditions of the male and female students on daily basis in the school and write down the results under the screening record sheet provided by the District Health Centre (DHC) Bara Kahu, and Integrated School Health Program. Statistical analysis was conducted the frequency and percentage were determined using SPSS version 20. All of the information was presented in the form of tables and significance was assessed using Two Way ANOVA Test at p value 0.05. The result indicated that the presence of intestinal problems in students age group 10 years to 14 years were present in urban areas of Islamabad. The digestive problems present in the male as well as female students were very common and responsible for their illness. The common intestinal problems were recorded as abdominal pain (11%), diarrheal (1%), constipation (1%), nausea (2%), stomach pain (9%), weight loss (1%), Weight gain (6%) and gastric problems (4%). The overall intestinal infections prevailed in the male and female students living in the urban areas of Islamabad indicated the infected students (35%) and normal students (65%). The intestinal problems are spreading among students due to unhygienic conditions, poverty and unawareness of living conditions. The intestinal infections of students should be routinely checked by the School Medical officer to diagnose infections at the earliest stage and prevent any complications later on.

**Keywords:** School students, Physical and Intestinal problems, Pakistan

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### INTRODUCTION

Intestinal infections are more prevalent in developing countries and among people who have unhygienic environment (WHO Expert Committee, 2002). They are highly prevalent in subtropical and tropical countries. Intestinal parasites are estimated to infect about more than one million people. The patients with chronic conditions are about 300 million among which majority is of children (Curtale *et al.*, 1998). Several activities have been made to control intestinal parasitic infections. These activities include improving sanitation, providing hygienic food and water and proper access to health care professionals and health education (Steketee, 2003). The prime victims of intestinal parasites are children (Haque *et al.*, 2003). 50% of the patients infected with intestinal parasitic infections are school aged children (Bakr *et al.*, 2009). These parasites affect their attendance of school. Learning abilities, physical development (Hwang *et al.*, 2003) and nutritional status of host may also impure with intestinal parasitic infections. The susceptibility of parasitic infections may also increase due to under nutrition. In different countries epidemiological researches have shown that Intestinal parasites are endemic due to environmental, sanitary and socio-economic conditions (Curtale *et al.*, 1998). In Pakistan as in many other Sub-Saharan African countries, parasitic infections are widely distributed and affect various segments of the population. The current study was based on the determination of prevalence in urban areas of Islamabad, Pakistan to correlate them with socio-economic status and associated risk factors (age, education and gender). This study will contribute to lower down the prevalence in the studied areas by the application of different work plans and preventive measures in future.

The main objective of the study

- To determine the physical health conditions of male and female students in government setup schools
- To determine the associated risk factors between intestinal infections and physical health conditions among the male and female students

## MATERIALS AND METHODS

The present study was taken from two Higher Secondary Schools in the capital Islamabad, Pakistan. The 170 students (boys) aged 10–14 years out of 300 total male students were present in High Government School for Boys and the 136 female students aged 10–14 years out of 754 total female students were present in High Government School for Girls. The education in Government School is almost free to attract the children from lower income society. The study was conducted under Ethics Review Committee of District Health Quarter Bara Kahu and Poly clinic Islamabad, the Area Education Officer (AEO) for government schools and Principal of the schools.

### Study design

The experiment was conducted to determine the presence of intestinal infections in the students of urban areas living in Islamabad. First, we were given the instructions about the use of deworming medicine to control the harmful parasites, then check their physical conditions of the students and monitor it on the daily basis. Also filled the questionnaires about their physical and social condition of the lifestyle. The reported the adverse case about serious health issues to District Health Centre (DHC) Bara Kahu and send them to the Polyclinic hospital for the further medical treatment.

### Study setting

District Health Centre (DHC) Bara Kahu and Polyclinic hospital Islamabad

### Study duration

One-Year Duration

### Inclusion Criteria

Male Students and Female students which are mentally fit who have no psychological problem and age group from 10 to 14 years old taken part in this study and their parent were allowed to take medicine for deworming.

### Exclusion Criteria

All those male students and female students which were below 10 years or above 14 years not consenting to take a part of the study and those children who parents were not willing to take medicine for deworming as well as outsiders were not allowed to take part in this study

### Sample size

Using the WHO sample size calculator, the sample size for this study was 306, based on previous study's (50%) population parameter, 95 % confidence interval, and margins uncertainty (5 percent).

$$N = \frac{p(1-p) z^2}{E^2}$$

P stands for prevalence.

Z is the z-score for the selected level of confidence. The z-score represents a 95 percent confidence interval.

E stands for error margin.

The number N represents the size of the population.

### Sampling Technique

Non-probability 'Convenience sampling'

### Analysis plan

For the categorical variable, the frequency and percentage were determined using SPSS version 20. All of the information was presented in the form of tables and significance was assessed using Two Way ANOVA Test at p value 0.05.

## RESULTS AND DISCUSSION

The result indicated that the presence of intestinal problems in students age group 10 years to 14 years were 3% in which males were affected 2% and female affected 1% in urban areas of Islamabad as serious intestinal infectious cases, referred them to Polyclinic Hospital reported in table 1. The significance of the sample was determined by

Two Way ANOVA Test at p value 0.05. the result indicated that the mean differences between the age group and intestinal infection frequencies of the students were 0.01 which was less than 0.05 showed that less significant value. It indicated that the age groups of the students have weak association between them and the intestinal infections have independent from the ages of the students. It can be prevailed in any age group of human because it has no strong relationship between them.

**Table 1.** Prevalence of the intestinal infections among different age group.

Age of the students	Prevalence (Infection in male)		Prevalence (Infection in female)		Two Way ANOVA Test	Remarks
	Frequency	Percentage (%)	Frequency	Percentage (%)		
10 years	0	0	0	0	0.01	Less Significant
11 years	0	0	0	0	0.01	Less Significant
12 years	0	0	1	1	0.01	Less Significant
13 years	03	2	1	1	0.01	Less Significant
14 years	02	1	0	0	0.01	Less Significant
Sample Size	Male (N) 170		Female (N) 136			

The comparison of the intestinal infections of urban areas of Islamabad with reported values of the intestinal infections present in urban areas of Quetta reported by (Karim *et al.*, 2024) as shown in table 2. The result narrated that the presence of serious intestinal infections in male students and female students at the age group of 10 years to 14 years in urban areas of Islamabad were less common as compared with the intestinal infection prevailed in different cities of Pakistan.

**Table 2.** Comparison of the presence of intestinal problems with reported values in urban area.

Present Study				Karim <i>et al.</i> , 2024					
Gender	Total students	Frequency	Intestinal infections		Gender	Total students	Frequency	Reported value	
			Prevalence %	Total prevalence %				Prevalence %	Total prevalence %
Male	170	5	3%	3	Male	40	9	22	17
Female	136	2	1%		Female	40	5	12	
Total (N)	306				Total (N)	80			

The digestive problems present in the male as well as female students were very common and responsible for their illness. The result indicated the common digestive problems were abdominal pain (11%), diarrheal (1%), constipation (1%), nausea (2%), stomach pain (9%), weight loss (1%), Weight gain (7%) and gastric problems (4%) as shown in Table 3.

**Table 3.** Frequency and Percentage of digestive problems in students (N=306).

Infection variables	Frequency	Relative Frequency (%)	Cumulative Frequency (%)
Abdominal pain	35	11%	11%
Diarrheal	3	1%	12%
Constipation	4	1%	13%
Nausea	5	2%	15%
Stomach pain	27	9%	24%
Weight loss	4	1%	25%
Weight gain	18	6%	31%
Gastric problems	12	4%	35%
<b>Total Infected Students</b>	108	35%	100%
<b>Normal Students</b>	198	65%	

The overall intestinal infections prevailed in the male and female students living in the urban areas of Islamabad indicated the infected students (35%) and normal students (65%) as shown in Fig. 1.

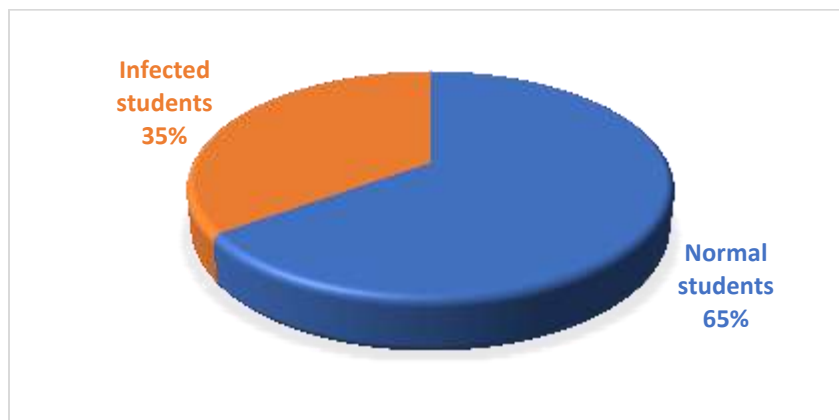


Fig. 1. Over all intestinal infections in the students (N=306).

The impacts of different variables on intestinal infections among the students were recorded through the open-ended question which were used to find out their daily hygienic routines and social economic status in a society as reported in table 4. The result narrated that lifestyle and hygienic conditions of students are play crucial role to control the intestinal infections in them.

**Table 4.** Impacts of different variables on the intestinal infections and their percentage.

Variables	Relative frequency (%)
<b>Hand washing habits</b>	
Yes	82
No	18
<b>Type of Drinking water</b>	
Treated	90
Untreated	10
<b>Educational Status</b>	
Primary or Below	55
Above Primary below Matric level	45
Above graduation	5
<b>Social Economic Status</b>	
Lower	52
Middle	40
High	8
<b>Family size</b>	
< 5	26
< 10	52
< 15	16
< 20	06

Many prevalent studies have been highlighted that Intestinal infections are serious health burden nationally and internationally. In the prevailing study, the overall prevalence of Intestinal parasitic infections was 35%, which agreed with Chaudhry *et al.* (2004) as 29% and Mbae *et al.* (2013) as 26%, but the rate of prevalence was comparatively lower than study of Mehraj *et al.* (2008) from Karachi, Pakistan who obtained 53% prevalence and Mumtaz *et al.* (2009), who observed 68.8% prevalence in children under five years age at a tertiary care hospital in Karachi. The study revealed that Intestinal Parasitic Infections are more prevalent in males then less prevalent in female. This may be because males have the higher risk of contracting to outer environment as Jasti *et al.* (2007) also reported higher proportion of males (29%) than females. Educational status and awareness about hygiene play an important role in the transfer of Intestinal Parasitic Infections. Our study revealed that higher the education level

lower was the risk of acquiring Intestinal Parasitic infections. The Ministry of Federal Education and Professional training, Islamabad and Federal Directorate of Education, Islamabad are taken initiative steps to control the health issues in children of Islamabad in 2023 to enhance children's growth and promote school attendance. They developed the health centre unit in schools to control the infectious diseases in children and also provided free lunch meal on daily basis in all Primary Government Schools of Islamabad to eradicate the nutritional deficiency in them. This milestone steps should be taken at Government Secondary Schools (VI-X) Islamabad, to control the harmful infections and nutritional deficiency present in them.

## CONCLUSION

The present study shows that the physical conditions of students are depending on their hygienic conditions. Teachers should advice the students about the good habits for healthy life styles; such as to wash hands with soap before take meal, avoid unhygienic food, eat properly cooked meal, etc. Teachers should advise children to eat fresh vegetables, to drink milk and suggest to use dietary fibers as per the doctor advice. Regular examination is important for our health because it will help to detect certain conditions, such as abdominal pain, diarrhoea, constipation, nausea, rash, stomach pain, etc. The physical health conditions of students and their hygienic conditions should be routinely checked by the School Medical Officer to diagnose the infections at the earliest stage and prevent any complications later on.

## ACKNOWLEDGEMENT

We are thankful to Principal Anwar Khan (IMSB F-6/2 Islamabad) and Principal Asifa Naseem (IMSG G-6/2 Islamabad) to assist us to take part in Deworming Screening Training for students under the supervision of the District Health Centre (DHC) Bara Kahu, and Integrated School Health Program. We are also grateful to school staff members and class teachers to cooperate with us and helped to accomplish this task. This program was done by collaboration of District Health Centre (DHC) Bara Kahu, and Integrated School Health Program.

## Disclaimers

<b>Author Contributions</b>	M. Aaqil Nadeem Usman Ahmad, Saira Akbar and Ayesha Qayyum Malik to take part in Deworming Program conducted by District Health Centre (DHC) Bara Kahu, Polyclinic Hospital Islamabad and Integrated School Health Program Usman Ahmad and M. Aaqil Nadeem designed the study, performed the statistical analysis, and wrote the manuscript. Imdad Ali Channa, Altaf Hussain and Abdul Mateen assisted with data interpretation and manuscript revisions.
<b>Conflict of Interest</b>	The authors declare that there are no conflicts of interest.
<b>Data Availability</b>	Data and supplements available on request to the corresponding author.
<b>Funding</b>	NA
<b>Ethical Approval</b>	Ethics Review Committee of Pakistan Institute of Medical Sciences (PIMS) and the Area Education Officer (AEO) for government schools and Principal of the school
<b>Trial Registration</b>	NA
<b>Acknowledgments</b>	Department of Federal Directorate of Education, Islamabad.

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(Accepted for publication January 2025)