



# Practical parasitology courses and infection with intestinal parasites in students



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## KEYWORDS

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**Summary** Students who are working in research or educational laboratories of parasitology, as well as health care workers providing care for patients, are at the risk of becoming infected with parasites through accidental exposure. The main purpose of this study was to identify potential positive cases of intestinal parasitic infections among students who took practical parasitology courses compared with students who did not take any practical parasitology courses in Lorestan University of Medical Sciences, Khorramabad, Iran, in 2013–2014. A total of 310 subjects from various majors were invited to voluntarily participate in the study. Various demographic data were collected using questionnaires. Three stool samples were collected from each individual on alternate days. Saline wet mounts (SWM), formalin–ether sedimentation test (FEST), Sheather floatation test (SHFT) and trichrome and modified Ziehl–Neelsen staining methods were used to diagnose the presence of intestinal

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parasites. The prevalence rate of intestinal parasites (IPs) among the students was 11.93%. There was a significant difference between majors in the infection with IPs ( $P < 0.05$ ). The most frequently observed IPs were *Blastocystis hominis* (4.51%) and *Giardia intestinalis* (3.54%). The results of this study showed that the transmission of pathogenic parasites in the educational course of practical parasitology could occur and must be taken into careful consideration.

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## Introduction

Parasitic diseases constitute great medical, social and economic problems worldwide. Parasitic infections have a high prevalence and it is estimated that more than three billion people are infected by IPs in the world today [1]. The role of IPs in causing morbidity and mortality as well as in the pathogenesis of other infectious diseases differs from species to species [2,3]. Similarly, the distribution and prevalence of various species of IPs also differ from region to region due to several environmental, social, and geographical factors [4,5]. Thus, a study on the prevalence of various intestinal parasitic infections is a prerequisite not only to formulate appropriate control strategies but also to predict risks for communities under consideration [6]. The global infection rates due to gastrointestinal parasites are on a remarkable scale, particularly in undeveloped or developing countries. In a study in Ethiopia, the prevalence rate of IPs among school children was 83.8% [7]. In another survey in Turkey, 31.8% of the studied school children had been infected with one or more IPs [8]. In another study that was performed on students in southern Sudan in 1998, 15 different species of parasites were found among the subjects after parasitological examination [9]. The seasonal prevalence of IPs in the United States during 2000 was 31.62% [10]. The prevalence of IPs among students in various regions of Iran varies, for example, Tehran 18.4% [11], Kashan 9.46% [12], and Kouhdasht 32.5% [13].

One of the common health indicators in every community is the prevalence of parasitic diseases among its people. The capacity to perceive these parasitic diseases and the effective causes in their establishment and dispersion patterns enhance health monitoring [14]. The parasitology laboratory is one of the most common places where contamination with parasites could occur. Thus, people

who are working or examining in this place, such as students of the medical sciences, could be at the risk of being infected with parasites. Thus, this case-controlled study was performed to determine the prevalence of IPs in students who took practical parasitology courses in parasitology laboratories compared with students who did not take any practical parasitology courses and had never been in a parasitology laboratory in Lorestan University of Medical Sciences, Lorestan province, west Iran, during 2013 and 2014.

## Methods

### Study population

The present study was performed in the parasitology laboratory of the Faculty of Medicine, Lorestan University of Medical Sciences, Khorramabad City, West Iran, from May 2013 to January 2014. The participants were 175 students who were majoring in Medicine, Laboratory Sciences, Nursing, Medical Emergencies and Controlling Diseases Health who took practical parasitology courses (exposed group) and 135 students of the Midwifery, Family Health, Health Information Technology and Operation Room majors who had never been in a parasitology laboratory (unexposed group). Only students with a negative parasitology result before the start of the course were enrolled in the study. All of the participants were included in the study voluntarily. For every individual, a questionnaire including demographic information was also completed. Three stool samples were collected from each individual in pre-labeled, leak-free, plastic specimen containers, on alternate days; and each sample arrived at the laboratory on the day of collection under cold storage conditions. According to the parasitological examination results, individuals were assigned to the case or control groups. Subjects infected with

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