



Original Article

Intestinal parasitic infections among the household staff working in Saudi family houses Jeddah, Saudi Arabia

Haytham Ahmed Zakai*, Anas Ali Abunar and Almohanned Ayman Khoudari

Faculty of Applied Medical Sciences, King Abdulaziz University, P.O. Box 80324, Jeddah-21589, Kingdom of Saudi Arabia.

Abstract: This study aimed to detect and examine the prevalence of intestinal parasitic infection among the household staff of Saudi families in Jeddah, Saudi Arabia. One hundred stool samples were collected from the household staff 34 female and 66 male. Stool samples were examined using the direct wet smear and the formalin-ethyl acetate sedimentation technique. Stages of intestinal parasites were found in 15 samples (5 from male 10 from female participants). The most prevalent species found was *Blastocystis hominis* and *Entamoeba histolytica*. The highest rate of infection was seen in expatriates from Bangladesh. The present study reflects the importance of pre-employment medical check-up and regular investigation.

Keywords: Intestinal parasites, Household staff, Jeddah.

1. Introduction

Parasitic infections are a major public health problem worldwide. They attract considerable public health importance, particularly in developing countries. About one third of the world (more than two billion people) is infected with intestinal parasites [1]. Different factors may contribute to the prevalence of intestinal parasitic infections. Hygiene and sanitation are of the most important factors [2]. Working in food service with poor personal hygiene may lead to transmission of intestinal parasites. In Saudi Arabia, Jeddah is the second largest city in terms of population with close to three million people living in and around the city. It has experienced a fast growing economy in the past ten years. This resulted in a hiring a large number of expatriates to work in houses of Saudi families from many developing countries, especially from south and south east Asian countries, Sri Lanka, Philippines, Indonesia, Pakistan, India and Bangladesh. Such workforce of expatriates coming from developing countries may be expected to be a reservoir of many intestinal parasites that can be transmitted feco-orally. Many of them are hired and are asked to deal with food handling and preparation. Others may be asked to work as domestic helpers and take care of children and elderly. In this study, we examined the prevalence of

intestinal parasitic infection among the household staff in the homes of Saudis families in Jeddah, Saudi Arabia. The aim of the study was to assess the prevalence of intestinal parasites in samples of house helpers and drivers working for Saudi families.

2. Materials and Methods

One hundred stool samples were collected from the household staff in the homes of Saudis families in Jeddah city after signing the appropriate participation consent form. To ensure a uniform random distribution of samples, Jeddah city was divided into five residential areas: East, North, South, West and the Center. Stool specimens were collected from the household staff from each residential area after visiting families and workers and obtaining appropriate permission and consent forms. Household staff were interviewed and asked to answer a questionnaire which covered demographic data, occupation and nationality. Samples and questionnaires were labeled with a unique number immediately after collection. Samples were analyzed in the laboratory using the direct wet smear and the formalin-ethyl acetate sedimentation technique as described by Garcia [3]. Data was analyzed with MS Excel 2000.

*Corresponding author:
E-mail: hzakai@kau.edu.sa; Telephone: +966 0554334116.

3. Results

One hundred stool samples were collected from the household staff in Jeddah and examined as described above. Ages of participating individuals ranged from 20 to 90 years (mean = 35.02; SD = 10.53). Male participants were 66%. Only 15% of specimens were positive for intestinal parasites. Of the 34% female participants, only 5 specimens were positive for intestinal parasites while 10 specimens from male participants were positive for intestinal parasites. The commonest parasite seen was *Blastocystis hominis* (9%), *Entamoeba histolytica* (2%), *Entamoeba coli* (2%) and hookworms (2%) as shown in Table 1.

Samples were collected from individuals of different nationalities. Thirty three percent of total samples were Bangladeshi (30 negative and 3 positive), 7% were from Egyptians (all were negative), 9% were from Eritrean (7 negative and 2 positive), 12% were from Philippine (11 negative and 1 positive), 5% were from Nigerian (3 negative and 2 positive), 12% were Indonesian (10 negative and 2 positive), 5% were Indian (all were negative), 8% were Pakistani (7 negative and 1 positive), 6% were Chadians 3 negative and 3 positive), and 3% were Yemeni (2 negative and 1 positive) as shown in Fig. 1.

4. Discussion

Intestinal parasitic infections remain a major public concern as they are endemic worldwide [4]. The prevalence of intestinal parasitic infection among the household staff in the homes of Saudi families in Jeddah, Saudi Arabia was investigated in this study as these individuals are sharing the same house and the same food with the Saudi family and are helping with food preparation and delivery. In this study, 15% of stool specimens were positive for intestinal parasites. Pathogenic parasites were notified in 4% of samples while non-pathogenic parasites were seen in 11% of samples. Although the presence of non-pathogenic parasites does not usually cause any symptoms, its presence usually reflects the degree of hygiene in such individuals.

More than 30% of positive samples were from Chadian, Nigerian, and Yemeni nationals. However, the figure cannot be trusted since the number of samples from these nationalities was very low (n = 6, 5, 3 respectively). Furthermore, 10% of Bangladeshi participants had intestinal parasitic infections, while this figure didn't reach the 2% value in other nationalities. Previous studies have shown an extremely high rate of infection with intestinal parasites, particularly *Giardia lamblia*, reaching 98% [5].

Table 1. Intestinal parasitic infections among household staff.

Parasite	Males	Females
<i>Blastocystis hominis</i>	3	6
<i>Entamoeba histolytica</i>	1	1
<i>Entamoeba coli</i>	1	1
Hookworms	0	2
Negative	60	24

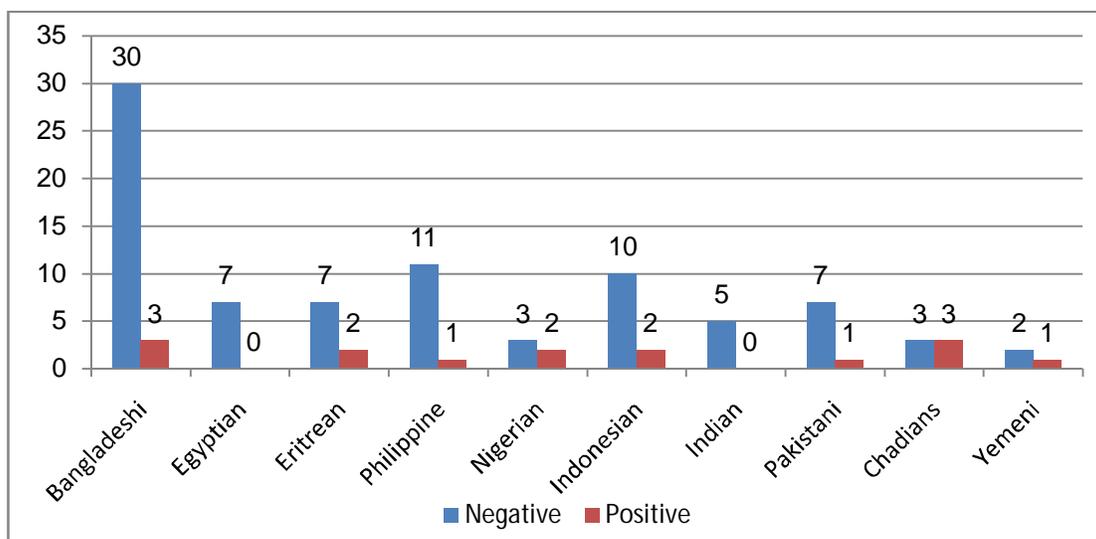


Fig. 1. Distribution of infection among different nationalities.

As a regulation in Saudi Arabia, a residency permit is not issued unless the individual performs a pre-employment medical examination. However, the treatment is not usually followed up, nor a post-treatment stool sample is examined. The low number of pathogenic parasites detected reflects the impact and importance of performing a pre-employment medical examination for all workers prior to issuing a residency permit. However, the presence of parasitic infection in 15% of samples may question the type of food and hygiene in these individuals. Furthermore, strict rules of treatment follow up and post-treatment stool examination should be enforced. A previous study of intestinal parasitic infections among workers undergoing a medical checkup revealed the presence of intestinal parasites in 55% of samples [6]. However, a sample in the previous study was selected among individuals undergoing pre-employment medical check-up.

Since many of the participants may be involved with food handling, food delivery, elderly and baby care it is recommended that these individuals be examined periodically to ensure a healthy status of themselves and of those they deal with since there is a possibility for them to carry such parasitic infections as asymptomatic carriers and to transmit them to others [7-10].

References

- [1]. Chan, M.S. (1997). The global burden of intestinal nematode infections—Fifty years on. *Parasitol. Today*, 13:438–43.
- [2]. Zakai, H.A. (2004). Intestinal parasitic infections among primary school children in Jeddah, Saudi Arabia. *Journal of Egyptian Society of Parasitology*, 34: 783-790.
- [3]. Garcia, L.S. (2006). *Diagnostic Medical Parasitology*. 5th Edn, American Society for Microbiology Press, Washington. pp.1202.
- [4]. Dash, N., Al-Zarouni, M., Anwar, K. and Panigrahi, D. (2010). Prevalence of Intestinal Parasitic Infections in Sharjah, United Arab Emirates. *Human Parasitic Diseases*, 2: 21-24.
- [5]. Goto, R., Mascie-Taylor, C.G., Lunn, P.G. (2009). Impact of intestinal permeability, inflammation status and parasitic infections on infant growth faltering in rural Bangladesh. *British Journal of Nutrition*, 101: 1509-1516.
- [6]. Koshak, E.A. and Zakai, H.A. (2003). Spectrum of pathogenic and non-pathogenic intestinal parasites in pre-employment medical check-up for workers and their families. *Journal of Family & Community Medicine*, 10: 47-53.
- [7]. Abdel-Hafez, M.A., El-Kady, N., Noah, M.S., Bolbol, A.B. & Baknina, M.H. (1987). Parasitic infection in expatriates in Riyadh, Saudi Arabia. *Annals of Saudi Medicine*, 7: 202-206.
- [8]. Al-Madani, A.A., Mahfouz, A.A. (1995). Prevalence of intestinal parasitic infections among Asian female housekeepers in Abha District, Saudi Arabia. *Southeast Asian Journal of Tropical Medicine and Public Health*, 26:135–137.
- [9]. Ali, S.I., Jamal, K., Qadri, S.M. (1992). Prevalence of intestinal parasites among food handlers in Al-Medinah. *Annals of Saudi Medicine*, 12:63–66.
- [10]. Al-Madani, A.A., Omar, M.S., Abu-Zeid, H.A., Abdulla, S.A. (1989). Intestinal parasites in urban and rural communities of Abha, Saudi Arabia. *Annals of Saudi Medicine*, 9:182–185.