Conference Paper

Personal Hygiene and Sanitation in Cafeterias at University X in Depok, Indonesia

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Abstract

The study aimed to identify personal hygiene and sanitationpractices among 99 food handlers working in the cafeterias at University X. This was a cross-sectional study. Research was conducted between April and July 2016 in a university in Depok, Indonesia. There are 16 cafeterias at the university. Purposive sampling methods applied. The population of this research was the food handlers in the university's cafeterias.

The laboratory test that detected the number of worm eggs/gram in participants' feces was applied to determine the worm infection. Information on the participants' personal hygieneand the sanitation of the cafeteria facilities was collected through interviews and observation.

The results showed that fourparticipants had intestinal parasitic worm infections.A personal hygiene assessment found that 83% of participants did not have appropriate hygiene, and95% of the cafeterias had inadequate sanitation of faclities.

Certification, medical checkups for food handlers, and regular training insafe food-handling practices should be considered.

Keywords: Worm, intestinal parasite, feces, personal hygiene, sanitation

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Received: 16 November 2017
Accepted: 15 December 2017
Published: 8 Januray 2018

Publishing services provided by Knowledge E

Selection and Peer-review under the responsibility of the ICGH Conference Committee.

1. INTRODUCTION

Intestinal parasitic worm sare one of the causes of food borne diseases, which result in 1 in 10 people falling ill, 33 million Disability-Adjusted Life Years (DALYs),and 420,000 deaths every year [23]. Ascaris lumbricoides, T. Trichiura atauwhipworm [6, 9, 13], and hookworm [12] are types of intestinal parasitic worms that are commonly found in human intestines [4]. An estimated 1,121 million people in the world are infected with

Ascaris, 795 million are infected with whipworms, and 740 million are infected with hookworms [5].

To date, research related to the contamination of food and drinks in the cafeterias at University X have only focused on the microorganism Escherichia coli [18–21]. There has not been any research to identify intestinal parasitic worm organisms, though E. coli contamination is usually followed by the presence of intestinal parasitic worms [11, 13, 15].

Soil-transmitted helminthes (STH) and trematodes infect 15 billion and 56 million people, respectively, around the world. The prevalence of intestinal worms is higher than that of intestinal protozoa [6]. Hence, research about food contamination in universities should also identify the presence of intestinal worms so that the approach to preventing infection or worm contamination can be observed.

Since the cafeterias at University X serve approximately 50,000 people each day, it is easy to imagine how high mobility and canteen activities in the university. The purpose of this study was therefore to assess food hygiene practices and determine the prevalence of intestinal worm infections among food handlers working in the cafeterias at University X.

2. METHODS

This cross-sectional study was conducted in May 2016 in16 cafeterias at University X,located in Depok. All food handlers who had direct contact with food during preparation or handling, regardless of their employment status (either permanent or contract employee), were eligible for sampling. The samples (n=99) were taken through a simple random sampling technique. Face-to-face interview methods using a structured questionnaire and observational checklist were employed to collect informtion related to personal hygiene and the availability of hygiene and sanitation facilities.

Before interviewing, participants were asked to bring two to three grams of fresh stool collected in a plastic cup with a tight-fitting lid forlaboratory testing. The collected stool specimens were first examined microscopically through the direct method and then the Kato-Kat method in the parasitology laboratory in Medical School, Universitas Indonesia.

3. RESULTS

Table 1: Distribution of worm infection.

Worm Infection	Number	%
Positive	4	4
Negative	95	96
Total	99	100

3.1. Socio demographic Characteristics

Based on the surveys, out of the 99 participants in this study, most were female (57.6%), older than 18 years (91%), and high-school graduates (57.6%). These findings show that the study participants had homogenous characteristics.

3.2. Prevalence of Intestinal Parasites

Food handlers with worm infections represented only 4.2% of the study participants (Table 1). All the infected participantswereolder than30 and had not graduated from high school. They worked in different cafeterias throughout the university.

The assessment of personal hygiene was based on eight survey questions. Participants had to answer all questions correctly to be in the"appropriate" category. Only 17% of the study participants were in the "appropriate" category.

3.3. History of Food Handlers' Health and Training Status

Information about the health of food handlers was obtained from the interviews because most participants did not have a medical record. None of the participants reportedany symptoms of worm infection or consumed any medicine to treat worms during the last year. The study also found that only 39.4% participants received training related to personal hygiene and cafeteria sanitation. These trainings are led by several parties in the university, including the Faculty of Public Health, student organizations, and university management.

3.4. Availability of Hygiene and Sanitation Facilities

The assessment of the availability of hygiene and sanitation facilitieswas based 12 variables. Participants had toanswer all questions correctly for their cafeteria to be in the "good" category. Of the total participants, only 5% worked in cafeterias that received

Table 2: Assessment of Personal Hygiene.

Variables of Personal Hygiene Assessment	Frequency (n=99)	Percent (%)
1. Do you handle food when you are sick?		
Yes	14	14.1
No	83	83.8
2. Do you receive a medical checkup everysix months?		
No	75	75.8
Yes	24	24.2
3. Do you currently have an ulceration or diarrhea?		
Yes	16	16.2
No	83	83.8
4. Do you wash your hands before work?		
No	17	17.2
Yes	82	82.8
5. Do you use appropriate and hygienic tools to handle food?		
No	6	6.1
Yes	93	93.9
6. Do you cut your nails?		
No	19	19.2
Yes	78	78.8
7. Do you use soap to wash your hands?		
No	9	9.1
Yes	90	90.9
8. Do you use hygienic tools when processing food?		
No	5	5.1
Yes	92	92.9

a "good" rating. Nonetheless, approximately 70-80% participants have enough water to wash their hands, trash bins, and specific tools to handle foods.

Table 3: Availability of Hygiene and Sanitation Facilities.

Variables of Availability of Hygiene and Sanitation Facilities	Frequency (n=99)	Percent (%)
1. Is a trash can provided in every room where trash is created?		
No	7	6.9
Yes	90	88.2
2. Do the trash cansuse an appropriate design and materials, so that they do not leak, are waterproof, and havea cover?		
No	32	31.4
Yes	65	63.7
3. Does the cafeteria provide water for washing hands?		
No	25	24.5
Yes	74	72.5
4. Does the cafeteria provide soap and a dryer for washing hands?		
No	43	42.2
Yes	56	54.9
5. Does the cafeteria provide an appropriate number of hand washing facilities (the ratio of hand washing to customers should be 1:10)?		
No	54	52.9
Yes	45	44.1
6. Does the cafeteria have sealed storage?		
No	25	24.5
Yes	61	59.8
7. Does the cafeteria have ventilation covered by netting?		
No	77	75.5
Yes	9	8.8
8. Does the cafeteria have ventilation covered by mice's trellises?		
No	80	78.4
Yes	6	5.9
9. Is the cafeteria clean with no trash?		
No	11	10.8
Yes	84	82.4
10. Do you wash food before processing?		
No	7	6.9
Yes	88	86.3
11. Do you use appropriate tools for handling foods?		
No	8	7.8
Yes	85	83.3
12. Does the cafeteria provide protection from mice and bugs?		
No	49	48
Yes	44	43.1

4. DISCUSSION

The samples of participants' feces showed that only 4 of the 99participants were infected with intestinal parasitic worms and that the infected participants had only-completed primary school. A previous study found that education level influences the understanding of intestinal parasitic infections,which may be animportant factor in the occurrence of intestinal worm infections [2]. Many studies about worm infection across the globe have found that different geographical areas show a different prevalence of intestinal worm infections, which is probably associated with climate, temperature, geography [17], and sociodemography [22]. Intestinal parasitic worm infection in adults rarely occurs (below 5%) [1].

There are several risk factors related to intestinal parasitic worm infections, including unclean cafeteria facilities [3], poor hygiene practices [7, 25], hand-washing behavior after toilet use and use of soap when washing hands [14], medical checkups and history of worm infections [16], and education and knowledge about intestinal parasitic worm infections ([2].

One limitation of this study was the small sample size. As a result of the sample size, we were unable to use advanced analysis to determine an association between risk factors and infection. Andargie, Kassu, Moges, Tiruneh, and Huruy (2008) were also unable to find anassociation between risk factors and the occurrence of worm infections because of their small sample size.

In our study, most participants' personal hygiene was not categorized as "appropriate" because they failed to answer all the survey questions correctly. Even so, 80% of participants succeeded in meeting those standards related to washing their hands, cutting their nails, and using specific tools for handling food. They failed to achieve the standard related to regular medical checkups. Regular medical check up sare very important for workers, especially those working with food, because they can anticipate disease incidence [16]. Not only did most participants not receive regular checkups, but some also believed that medical checkups do not really matter and are too costly. Most participants only visit a health facility when they need medical treatment.

The cafeterias at University X are equipped with various hygiene and sanitation facilities; they have enough water for hand washing, trash bins, and specific tools that are used for handling food. Nevertheless, the availability of hygiene and sanitation facilities in the cafeterias is still inadequate because some of the cafeterias do not provide hand-washing facilities, protection from pests, trash bins made of standardized material, hand-washing soap, and covered food containers.

Most of the cafeterias did not provide wire netting to protect food from insects or wire traps to control mice and rats. Tools to protect foods from insects and vermin are essential because the presence of pests is one of the risk factors for intestinal parasitic infections [8, 10].

5. CONCLUSIONS

In conclusion, although the prevalence of intestinal parasitic infections among the study participants was only 4%,the study revealed that poor food hygiene practices among food handlers still existed. The study also showed the importance of the availability of facilities for personal hygiene (such as showers and toilets near working areas) and the provision of food safety measures focusing on sanitary surveillance, personal hygiene, and periodical medical checkups.

ACKNOWLEDGMENTS

We would like to express thanks to the Environmental Health Department, Faculty of Public Health, and Directorate of Research and Community Services of Universitas Indonesia for the material and financial support to undertake this study. Our sincere thanks also go to the study participants for their cooperation in this research.

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