



Second-Hand Clothe, a New Threat for Acquiring Parasitic Infection

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Dear Editor-in-Chief

Clothes are an important part of human life and in close contact with human. Their sanitation plays a significant role in human health. Some people purchase and wear second-hand or vintage clothes due to the economic problems. This fact put their health at risk of some microbial infection including bacteria, fungi, parasitic and viral infections. Some skin diseases such as dermatitis, scabies and fungal diseases can be transmitted by wearing unwashed second-hand clothes (1, 2).

Recently there is a considerable tendency among some low and middle-income people to purchase and wear used clothes. Despite of all above mentioned facts concerning the risk of acquiring some pathogens from second-hand clothes, there is no documented information on determination of probable risk of transmissible pathogens in second-hand clothes.

Therefore, the objective of the current study was to determine for the first time the parasites and ectoparasites of second-hand clothes in Tehran, Iran.

A descriptive-sectional study was carried out on 800 second-hand clothes (400 washed second-hand and 400 unwashed second-hand clothes) from 2018-2019 in Tehran, Iran. The detection was performed by the transparent tape technique

using a 2×6 cm rectangle of transparent tape. The adhesive side of the transparent tape swab is placed on the clothes, pulled off and placed, adhesive side down, on the labeled slide. The slides are collected and taken to the laboratory for examination. The slides were cleared using a drop of lacto phenol and examined under light microscopic with magnification of 4 and 10 X. Statistical analysis was carried out using the SPSS (Chicago, IL, USA) 14. Chi-Square test was applied to determine the significant association for the prevalence of parasites.

From 800 second-hand clothes, 22 (2.7%) were positive for parasites and ectoparasite contamination. The following agents were determined in unwashed clothes *Enterobius* egg 10 (1.25%), *Pediculus* spp. egg 6 (0.75%) and *Sarcoptes scabiei* 6 (0.75%) but no contamination was observed in the examined washed clothes. A significant difference was between contamination of second hand unwashed and washed clothes ($P<0.05$). Table 1 indicates the prevalence rate of contamination in the examined unwashed second-hand clothes. The highest and the lowest contamination rates were observed in male [11] and kid [4] clothes, respectively. Regarding type of clothes, jeans [6] showed the highest contamination rate.



Table 1: The prevalence rate of contamination in the examined unwashed second hand clothes

Variable	Male	Female	Kid	Coat	Over-coat	Jean	Shirt	Jacket	Scarf	T shirt	Manto	Underwear	Shoes	Hat
N(%)	298 (37.3)	276 (34.5)	226 (28.3)	85 (10.6)	40 (5)	162 (20.3)	152 (19)	105 (13.1)	32 (4)	102 (12.8)	54 (6.8)	28 (3.5)	28 (3.5)	12 (1.5)
<i>Enterobius</i> ova	5	2	3	1	0	5	0	2	0	0	0	2	0	0
<i>Pediculus</i> spp. ova	1	2	3	1	1	0	0	1	2	0	0	0	0	1
<i>S. scabiei</i>	5	0	1	2	0	1	1	1	0	1	0	0	0	0
Total	11	4	7	4	1	6	1	4	2	1	0	2	0	1

No parasitic agents were observed in the second-hand washed clothes whereas a significant parasitic prevalence rate was determined in the second-hand unwashed clothes. All of the collected agents have a great significance due to being contagious and their easy transmission and multiplication (3).

Human infestation by the collected ectoparasites including *Pediculus* spp. and *S. scabiei* lead to pediculosis and scabies diseases, respectively from unwashed second-hand clothes. Ectoparasites can result in severe allergic reactions, hypersensitivity, dermatitis and secondary infections in susceptible individuals (4, 5). The contaminated clothes with *Pediculus* spp. may not only transfer lice to the host but also louse-borne diseases such as louse-borne relapsing fever, epidemic typhus and trench fever (5). Another collected agent was *S. scabiei*, which is eight-legged mites that burrow into host skin and cause intense itching and blisters. Generally occurs in crowded populations. The highest contamination rate in the examined samples was related to *Enterobius* ova. The parasite is distributed around the world and ingestion of the egg is major route of transmission (1, 3).

In conclusion, prevalence of parasites and ectoparasite in the examined unwashed second-hand clothes is high. Second-hand clothes could spread skin and hair diseases particularly pediculosis and scabies. In addition, these clothes must wash,

iron or disinfect to diminish the chances of pathogen transmission to human.

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Conflict of interest

The authors declare that there is no conflict of interest.

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