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Health Risks Associated with Second-hand Clothing

Rahul Kumar Singh[1], Dr. Anu H. Gupta[2]

[1]Research Scholar, University Institute of Fashion Technology and Vocational Development, Panjab University, Chandigarh, India
[2]Associate Professor, University Institute of Fashion Technology and Vocational Development, Panjab University, Chandigarh, India

Abstract
The second-hand clothing market has gained popularity because of its affordability and sustainability and has grown significantly over the past few decades globally. Fast fashion has created the problem of overproduction and overconsumption of clothes. People frequently update their wardrobes, replacing older garments with new ones to stay aligned with the evolving fashion trends. The old clothes which are donated or discarded by the people often end up in thrift shops and markets. The original users of these garments sometimes do not wash or disinfect these clothes before donating or throwing them away. These second-hand garments, collected from multiple people, are often stored under unhygienic conditions. Wholesalers and sellers typically do not wash or disinfect these garments before resale, increasing the risk of infections, infestations, and other health-related issues. Lack of knowledge among consumers and people working in the second-hand clothing business puts them at a huge risk of getting exposed to many health problems. This review paper explores the potential health implications linked with the use of second-hand clothing and the ways to avoid these problems.

Keywords: Second-hand Clothing, Sustainability, Thrift Markets, Health Problems.

1. Introduction

Second hand clothing refers to the garments that were previously owned by someone else and were later donated, resold, passed over, or thrown away. Thrift markets are flea markets where used clothes are sold by multiple sellers at different stalls and people often have to search through pile of clothes before purchasing and thrift stores are retail stores selling used clothing but the products are properly organized and displayed. Second-hand clothes are also sold through online thrift stores. These include social media pages and websites dedicated towards selling second hand clothes. People also sell used clothes through online reselling platforms like Ebay and OLX.

Fast fashion has led to an increase in excess production of garments globally and most of these garments are made up of cheap quality materials which do not have a long life (Niinimäki et al., 2020). 80 billion to 150 billion garments are being manufactured every year and around 10-40 percent of them remain unsold, resulting in 8 billion or 60 billion excess garments every year (Tonti, 2024). Some of these excess garments end up in landfills and street markets where second-hand clothes are sold. Second-hand clothing can possibly cause health related problems by two ways- problems that already existed in the new garments like chemical residues and toxic chemicals, and the problems that originated after the garments are used

and donated or thrown away. Even if the used clothes are washed before donating or discarding, they can still get contaminated during storage and transportation. The second-hand clothes are usually not washed or disinfected by the sellers before selling them to the people. These clothes can contain various microorganisms (Rakhsanpour et al., 2021) and toxic chemicals (Sacks, 2026). As the second-hand clothing grows in popularity, it is important to understand the risks associated with it for public health, especially for people with a weak immune system.

This review paper explores the possible health implications related to second-hand clothing and discusses the methods to avoid and protect against these problems. This study adopts a qualitative review approach collecting data from secondary sources like published articles, reports, and research papers from reliable sources like government reports, peer-reviewed journals, and reputable news outlets.



Figure 1. A glimpse of Delhi's thriving second-hand clothing market

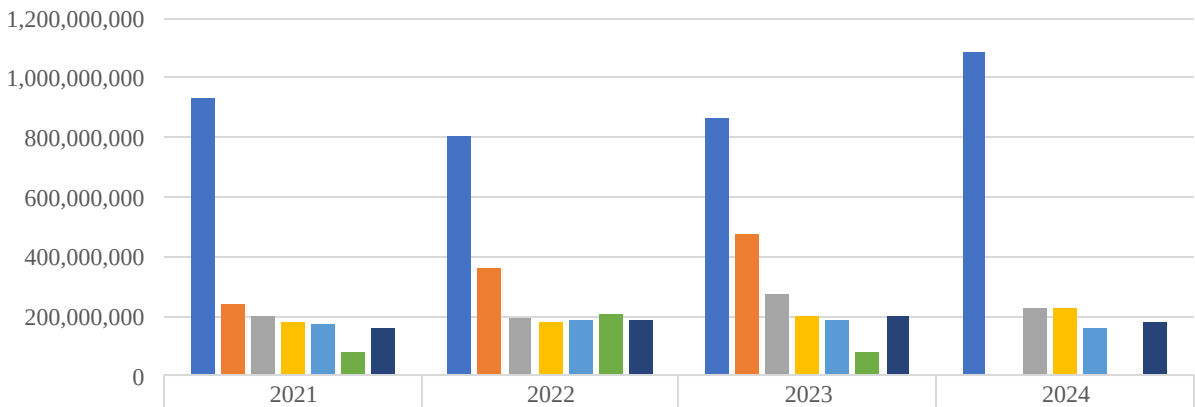
2. Rise in export and import of second-hand clothing

In today's era fashion is changing rapidly and new styles are being frequently introduced in the market. People want to own new styles and often get rid of their old clothes after using them for a few times. The second-hand clothing market has seen a significant growth worldwide within the last few decades due to reasons like affordability, sustainability, celebrity influence, growth in digital resale platforms, and popularity among the youngsters and fashion enthusiasts. The second-hand clothes are imported and exported by countries all around the world. The data from World Integrated Trade Solution (WITS) shows that the total import and export of used clothes has increased since the past few years.

In 2021, the European Union, the United States (US), and China were the leading exporters of second-hand clothes and accessories in the world. United States was the country that exported the maximum amount of used clothing (700,000 tons). China exported used clothing to African countries like Kenya, Angola, and Ghana. Asia (28%), Europe (24%), and Africa (19%) imported the maximum amount of used

clothes. Latin America and the Caribbean made up 16% of total imports, and non-EU European countries accounted for 10%. The fourth largest importer of used garments was Chile and it was also the top importer in Latin America. 126,000 million tons of used clothes was imported in Chile, and most of these clothes were from China, United States, and South Korea. 40% of the used clothes were imported through the tax-free zone in the Northern Atacama Desert known as Iquique free trade zone. Most of the used clothes cannot be re-exported to other countries because of their bad condition, and these are thrown away in the Atacama Desert (United Nations Economic Commission for Europe, 2023).

Figure 2. Top 5 importers of second-hand clothing between 2021-2024 in terms of quantity (in kilograms)



	2021	2022	2023	2024
Pakistan	933,992,000	806,648,000	866,494,000	1,084,520,000
UAE	243,180,000	359,010,000	473,363,000	
Malaysia	198,415,000	193,223,000	273,066,000	226,969,000
Kenya	183,506,000	177,364,000	197,821,000	230,266,000
India	174,537,000	186,543,000	188,473,000	160,254,000
Angola	82,354,700	208,359,000	82,719,900	
EU	161,731,000	186,403,000	197,631,000	177,052,000

The top five exporters of used clothing in the world in 2021 were the European Union, United States, China, United Kingdom, and Germany (WITS, 2021a). The countries which imported the maximum quantity of used clothing in 2021 were Pakistan (933,992,000 kgs.), United Arab Emirates (243,180,000 kgs.), Malaysia (198,415,000 kgs.), Kenya (183,506,000 kgs.), and India (174,537,000 kgs.) (WITS, 2021b)

In 2022, the European Union, United States, China, United Kingdom, and Republic of Korea exported the majority of second-hand clothes (WITS, 2022a). Pakistan (806,648,000 kgs.), United Arab Emirates (359,010,000 kgs.), Angola (208,359,000 kgs.), Malaysia (193,223,000 kgs.), and India (186,543,000 kgs.) imported the maximum quantity of second-hand clothes in the year 2022. Pakistan imported less quantity of used clothing compared to the previous year (WITS, 2022b).

In 2023, the European Union, United States, China, United Kingdom, Republic of Korea were the top five exporters of used clothing (WITS, 2023a). Pakistan (866,494,000 kgs.) was the top importer of second-hand clothing, followed by the United Arab Emirates (473,363,000 kgs.), Malaysia (273,066,000 kgs.), Kenya (197,821,000 kgs.), the European Union (197,631,000 kgs.), and India (188,473,000 kgs.) (WITS, 2023b).

In the year 2024, the European Union (1,263,180,000 kgs.), China (1,147,550,000 kgs.), United States (673,726,000 kgs.), Germany (437,971,000 kgs.), and United Kingdom (428,887,000 kgs.) were the top five exporters of used clothing (WITS, 2024a). Pakistan (1,084,520,000 kgs.), Kenya (230,266,000 kgs.), Malaysia (226,969,000 kgs.), the European Union (177,052,000 kgs.), and India (160,254,000 kgs.) were the top five importers of used clothing (WITS, 2024b).

The above data shows that Pakistan is the top importer of second-hand clothing in the world between 2021 to 2024. In the year 2024-25, Pakistan imported second-hand clothes worth $511 million surpassing the previous year's record of $434 million. Several people who cannot afford new clothes are shifting towards flea markets where they can purchase second-hand clothes, shoes, and other accessories at affordable prices. Pakistan Second-Hand Clothing Merchants Association (PSHCMA) stated that rise in poverty is responsible for the increase in import of used clothing in Pakistan (Pakistan Today, 2025). After the World Bank revised the global income threshold in 2025, Pakistan's poverty rate rose to 44.7%. The new poverty line for lower middle-income countries was increased from $3.65 to $4.20. This revision caused the poverty rate in Pakistan to rise from 39.8% to 44.7% (Rana, 2025). Other than poverty, the consumers of second-hand clothing across various countries like Malaysia, India, some countries from the United Arab Emirates, and Europe are attracted by the low prices of the used clothes.

The data between the years 2021-2024 clearly shows that the export and import of the second-hand clothes is continuously increasing from the past few years. The developing countries are importing more and more second-hand clothes every year mainly due to reasons like poverty, low price, and demand of second-hand clothes. The increased usage of second-hand clothes in these regions increases the risk of exposure to various health related issues due to lack of proper hygiene practices.

3. Microorganisms in second-hand clothes

The low prices of second-hand clothes attracts a large number of population from the lower to middle income spectrum, as well as budget conscious, environmental conscious, vintage fashion lovers, and fashion enthusiastic younger generations, specifically Gen Z and Millennials. But several problems associated with second-hand clothing can affect the health of the consumers and the people who are working with the used clothes. Second hand clothing items like t-shirt, shirt, shorts, jeans, etc. comes in direct contact with human skin and are worn regularly by people. These type of clothes can be potential carriers of microorganisms which can cause various health issues if they are not properly cleaned. Wearing second-hand clothing without washing and disinfecting poses the risk of acquiring various types of parasites, fungi, and bacteria.

In a study conducted in Tehran, Iran, the researchers tested 800 second-hand clothes. Out of these, 400 clothes were washed before testing and 400 clothes were not washed. The researchers used transparent tape technique using a 2x6 cm rectangular piece of tape. The sticky side of the tape was pasted over the clothes and pulled off and the tape was then placed on slides. A drop of lactophenol was used to clear the slides and the slides were observed under a microscope. Upon observation, it was found that out of the 800 second-hand clothes, parasites and ectoparasites were found on a total of 22 unwashed clothes. Out of this 10 clothes were found to be contaminated with Enterobius eggs, 6 clothes with Pediculus spp. eggs, and 6 clothes with Sarcoptes scabiei. It was also found that the washed clothes were not contaminated. Out of the 22 contaminated garments, jeans (6) was found to have the highest contamination rate (Rakhsanpour et al., 2021).

Enterobius Vermicularis also known as pinworm is an endoparasite which can cause an infection called enterobiasis. This parasite lays eggs on the perianal folds. Scratching the perianal area or using contaminated surface, clothes, bedsheets, etc. can cause the eggs to enter through the mouth. After entering the body the larvae hatches in the small intestine and the adult enterobiasis establishes in the colon, usually cecum. After ingestion of eggs, it takes around one month for the female to lay eggs. Fully developed females and males can measure between 8-13 mm and 2-5 mm respectively. The lifespan of an adult enterobius is around two months and the larvae inside the eggs takes 4-6 hours to develop under optimal conditions. It is very rare but possible for the eggs to enter the human body after inhaling and swallowing the air (Centers for Disease Control and Prevention, n.d.).



Figure 3. Enterobius Vermicularis eggs under a microscope.
https://en.wikipedia.org/wiki/Pinworm_infection#/media/File:Enterobius_vermicularis.png

Pediculus humanus is an ectoparasite that has existed for thousands of years, with evidence of its presence at excavation sites in Israel dating back to 60 A.D. (Mumcuoglu et al., 2003). They were also found in around 1000 year-old mummies found at an altitude of 3000 m in Peru and the researchers found that pediculus humanus have coexisted along humans for centuries (Raoult et al., 2008). In 2018, a woman bought a second-hand t-shirt from a local street market in Italy. She noticed small insects on it and upon examination they were found to be Pediculus humanus. A total of 26 lice (12 female, 10 male, and 4 nymphs) were found in the t-shirt and the majority of them were found in the seams of the t-shirt. Pediculus humanus was last reported in Italy in the year 1945. Pediculus humanus are usually found in overcrowded and unhygienic places and frequently require blood for its survival. Despite this, they were found alive on the second-hand t-shirt and it was presumed that it was able to feed a few hours before its discovery (De Liberato et al., 2019). Pediculus humanus can cause pediculosis, commonly known as lice infestation which causes the affected person to feel itching on the scalp, behind ears, neck, eyelashes, armpits, chest hair, and pubic area. Adult lice can be seen with naked eyes and they lay eggs near the hair shafts and scratching the affected area can develop small red bumps to appear due to an allergic reaction from their bites. Prolonged contact with bedsheets and clothing items can possibly lead to the transmission of lice. If

left untreated for a long time, they can also cause secondary bacterial infections (Medicover Hospitals, n.d.)



Figure 4. Pediculus humanus (lice).
https://link.springer.com/article/10.1186/s13071-019-3458-z/figures/1

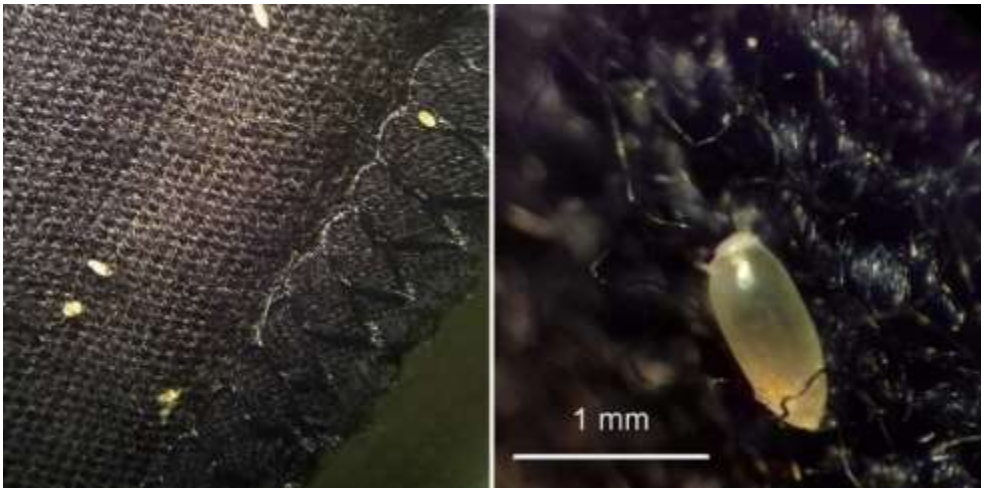


Figure 5. Pediculus humanus (lice) eggs on a t-shirt
https://link.springer.com/article/10.1186/s13071-019-3458-z/figures/1

Sarcoptes scabiei mites burrow into the skin and the adult female mite lay eggs inside skin, which causes severe itching and rash. It takes 3-4 days for these eggs to hatch, and 1-2 weeks to grow into adult mites. After 4-6 weeks, an allergic reaction is caused due to mite proteins and faeces in the burrows which cause intense itching and rashes. Itchy burrow lines and bumps are visible near fingers, wrists, arms, legs, waist, breasts, and groin area. This condition is known as scabies. In infants and children, the rashes caused by these mites appear larger and are visible on scalp, palms, ankles, and soles of the feet. The person can be affected from scabies even before the symptoms develop. Normally, 10-15 mites are found in a person's body but people with weak immune system can develop crusted scabies, also known as Norwegian scabies. It is a severe condition in which thousands or millions of mites can be present in a person's body. It can cause dry and scaly patches on the skin and can also cause secondary infections and can also be life

threatening. Scabies is usually transmitted through close skin contact. These mites can be transmitted through clothes and bedsheets used by the affected individuals and there is a high risk of transmission through a person affected by crusted scabies as compared to normal scabies (World Health Organization, 2023).

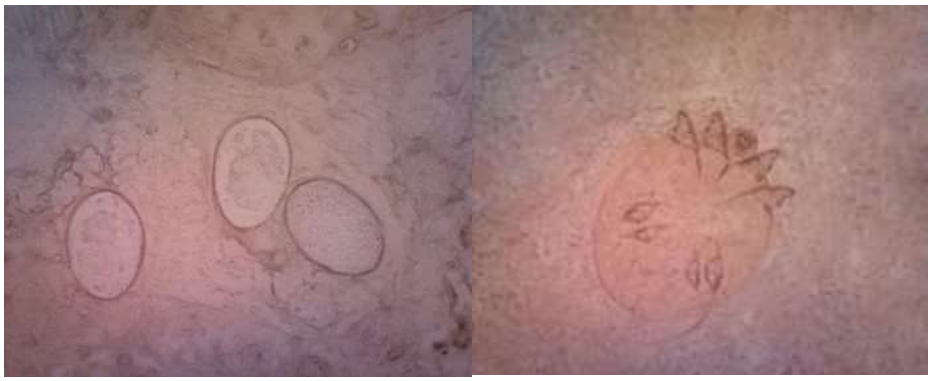


Figure 6. Sarcoptes scabei mite eggs (left), and nymph (right). https://www.researchgate.net/publication/301678407_Life_cycle_Sarcoptes_scabiei_and_pathogenicity_mite_in_boarding_school_Malang_Indonesian

In Nigeria, 60 samples of second-hand undergarments and children wear from 4 different markets were tested and the results showed that all the examined clothing items were contaminated with Bacillus subtilis and fungi like Candida albican, Candida tropicalis, Penicillium spp, Rhodotorula rubra, and Trichophyton rubrum. According to United States Environmental Protection Agency (1997), Bacillus subtilis is not harmful for humans. But fungi found in these clothes can cause fungal infections and people with weak immunity face the highest risk of infection. Candida can cause invasive candidiasis, which is the leading cause of mycotic deaths in the world. Candida albicans and non-albicans candida species are mainly responsible for these infections (Robbins and Cowen, 2025).



Figure 7. Second-hand undergarments being sold at a street market in Delhi

In Mbare, Zimbabwe during investigations in February 2026, the authorities found that the outbreak of bed bugs in the city is due to the storage and trading of imported second-hand clothes. Some of the

residents were using their flats as storage for second-hand clothes which led to bed bugs spreading in the city. According to the residents in high-density suburb the bugs spread rapidly in the blocks and several people reported that they were bitten by the bed bugs (Herald Online, 2026). A similar incident happened earlier in Zimbabwe in April 2025 in Mbare, where residents from several localities reported bed bugs infestation (Oduor, 2025). Despite carrying out fumigation, it was observed that the bed bugs developed resistance to the chemicals being used which led to the authorities adopting a different type of chemical to tackle the situation (Chibamu, 2025a).

4. Chemical residues and toxic chemicals in second-hand clothing

The production of clothes from the fibre to the final garment stage involves various steps in which chemicals are used. These chemicals can possibly cause harm to individuals wearing them if proper safety measures are not followed. There are various incidents in which toxic chemicals were found in new clothes. Clothing manufacturers, usually do not follow the safety measures or conduct tests to check for harmful chemicals (Niinimäki et al., 2020). And when these clothes are donated or discarded by the consumers, these might end up in the second-hand clothing markets. Even after washing these toxic chemicals still remain in the garments and can cause harm to the consumers.

The American Chemical Society found that clothes manufactured by fast fashion brands contained lead. These clothes also contained children's clothing in which zippers and buttons had excessive levels of lead in them. Fast fashion brands use lead acetate to help dyes adhere to materials and produce bright, long-lasting colors. 11 shirts from 4 retailers were found to have excess lead levels and brighter colored shirts were found to have higher levels of lead in them. High levels of lead in clothes can cause behavioural problems, damage the brain, and other health issues. Children are at most risk because of such clothes because they often chew fabric, buttons, and zippers of clothes and it can severely affect their health (Sacks, 2026).

The authorities from Seoul, Republic of Korea picked 8 products sold by Shein and found high amounts of phthalates, a chemical used to soften plastics. These samples also contained children's clothes and accessories. One pair of shoe was found to have 428 times the permitted levels of phthalates and it was the highest observation during this inspection. 3 bags were found to have 153 times the level of allowed phthalates. Phthalates can cause disruption in hormone levels and are linked to health issues like obesity, heart attacks, cancer, and fertility problems (The Economic Times, 2024). The majority of the second-hand clothes and accessories were made of low quality synthetic and mixed fibres which contain harmful chemicals. These chemicals not only harm humans but they also cause soil, water, and air pollution (United Nations Economic Commission for Europe, 2023).

5. Rules and regulations for second-hand clothing trade

The supply of second-hand clothes involves various steps like donation, sorting, packing, exporting, and importing. After importing, these clothes are sent to different parts of the importing country, where the bales of second-hand clothes are stored by the wholesalers in warehouses. The retailers purchase these bales from the wholesalers to further sell the used clothes to people. Second-hand clothes are often collected in bulk from multiple sources and mixed together which increases the risk of contamination. To import second-hand clothing in some countries like Namibia, the importers need to show fumigation certificate which declares that the used clothes were fumigated at the exporting country (Namibia Revenue Agency, 2023). There are no regulations focused on inspection for bacteria, fungi, or parasites. Despite

fumigation, the second-hand clothes can still be contaminated with various microorganisms and affect human health. There are various incidents where clothes were found to be contaminated with microorganisms and parasites, which might have existed primarily due to the lack of strict rules and regulations in the exporting and importing countries (De Liberato et al., 2019; Chibamu, 2025a).

Chile has zero tariffs and no limit on quantity of second-hand clothes that are imported into the country. According to Chile's Ministry of Health's Decree N°2389/1995, all used clothing made up of any kind of fibre i.e., natural or synthetic require a sanitation certificate issued from the exporting country before shipping the container. This rule aims to prevent the spread of any kind of health problems from used clothing. According to Decree N°2389/1995 sanitation is defined as "Any process before its commercialization that guarantees the sanitization of the product, a process that can be fumigation with formaldehyde, methyl bromide or another fumigant with similar effects or previous effects or washing with dry or humid heat carried out with different physical or chemical agents". For an exporter in the United States, it costs around USD 500 for fumigating a container and shipments coming to Chile from the United States requires fumigation. For protecting the plants and crops from pests like Halyomorpha Halys, SAG Resolution N°971 (March 2018) was implemented according to which used clothes, toys, and footwears imported from the United States require prior control before being allowed to enter Chile. According to this resolution the products need to be fumigated in the exporting country and the fumigation process must be carried out by companies authorized by the Animal & Plant Health Inspection Service of the United States, Department of Agriculture (USDA/APHIS) or by the competent federal or state agency (United Nations Economic Commission for Europe, 2024).

Countries like Argentina, Brazil, Colombia, Mexico, and Peru have banned the import of second-hand clothes to protect their domestic textile industry. This ban has also helped them avoid the possible health threats to their citizens and the environment. But some countries in Latin America like Chile, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Uruguay import second-hand clothes but these clothes are required to be sanitized before importing. These rules are implemented to protect public health and environment (United Nations Economic Commission for Europe, 2024).

In 2025, Zimbabwe government announced a ban on import and sale of second-hand clothing along with ban on street vending and night vending to protect the domestic textile businesses (Chibamu, 2025b).

Some countries do not have any health regulations for importing used clothing, which poses the risk of entry of potentially contaminated clothes into the local markets. Once second-hand clothes enter the street markets, there are barely any regulations focused on safe handling, storage, and selling of these clothes. Usually, the sellers directly sell these clothes to the consumers without washing or disinfecting them. Moreover, the majority of sellers in street markets lack awareness about the potential health risks associated with second-hand clothes. The garments being sold in street markets are also exposed to dust and other contaminants from the environment that could possibly affect an individual's health. Different countries have varying rules and regulations for importing second-hand clothes and accessories, but certificate of fumigation and sanitation is the most common document asked by most of the importing countries. Also, there are currently no regulations to verify that no toxic chemicals are present in second-hand clothes.

6. Conclusion

Second-hand clothes are popular among people mainly due to factors like low prices, unique products, and sustainability. Fast fashion has led to overproduction and over consumption of clothes and second-

hand clothes are an excellent alternative to tackle the problems caused by fast fashion. But the fast growing second-hand clothing market has many health risks associated with it. Second-hand clothes, especially when not properly cleaned or handled, can contain microorganisms and parasites like Enterobius Vermicularis, Pediculus Humanus (lice), Sarcoptes Scabei, Candida Albican, Candida tropicalis, Penicillium, etc. These organisms are responsible for infections like pinworm, lice infestation, and scabies. Although they are treatable, they can cause discomfort and may lead to serious complications if neglected. The risk becomes more serious for individuals with weakened immune systems.These microorganisms and parasites can affect the health of an individual and can also be life threatening. A study conducted in Iran found that simply washing and drying the clothes can help eliminate the microorganisms. Clothes containing toxic substances like lead and phthalates originating from textile production processes, can also end up in the second-hand clothing markets and can cause behavioural problems, damage organs, and cause other health problems. The second-hand clothes can also get contaminated during processes like donating, sorting, packing, exporting, and importing. It is also important to note that the risks are not limited to buyers alone. Individuals working in the second-hand clothing supply chain, such as sorters, transporters, and vendors, are equally vulnerable due to frequent contact with unclean garments and lack of protective gear. In many regions, especially in developing countries, limited awareness, poor hygiene conditions, and absence of strict regulations further increase these risks. Despite these concerns, the potential health hazards associated with second-hand clothing can be reduced through basic precautionary measures. Washing and disinfecting clothes before use, maintaining good personal hygiene, and increasing awareness about safe handling practices can significantly lower the chances of infection. Fumigation and sanitization can help eliminate the microorganisms but many countries do not ask for the certificate of fumigation and sanitization before importing second-hand clothes. Some countries have even banned the import of second-hand clothes to protect the domestic businesses. There is a need for clear guidelines and better regulation to ensure proper sanitation and quality control in the second-hand clothing market. Second-hand clothing remains an important and sustainable alternative to fast fashion, but its use must be accompanied by proper safety measures. Ensuring hygiene and raising awareness are key to making this practice both environmentally beneficial and safe for public health.

References

1. Centers for Disease Control and Prevention. (n.d.). *Enterobiasis (pinworm infection).* https://www.cdc.gov/dpdx/enterobiasis/index.html
2. Chibamu A. (2025a, April 29). *Bed bugs appear resistant to insecticides as fears are raised outbreak will spread to other areas.* NewZimbabwe .https://www.newzimbabwe.com/bed-bugs-appear-resistant-to-insecticides-as-fears-are-raised-outbreak-will-spread-to-other-areas/
3. Chibamu A. (2025b, August 4). *Government bans sale of second-hand clothing and street vending.* https://www.newzimbabwe.com/government-bans-sale-of-second-hand-clothing-and-street-vending/
4. De Liberato C., Magliano A., Romiti F., Menegon M., Mancini F., Ciervo A., Di Luca M., & Toma L. (2019). Report of the human body louse (Pediculus humanus) from clothes sold in a market in central Italy. *Parasites & Vectors, 12*(1), 201. https://doi.org/10.1186/s13071-019-3458-z
5. Herald Online. (2026, February 19). *Mbare bedbugs: City authorities blame second-hand clothes.* https://www.heraldonline.co.zw/mbare-bedbugs-city-authorities-blame-second-hand-clothes/
6. Medicover Hospitals. (n.d.). *Pediculosis (body lice): Symptoms, treatment and prevention.* https://www.medicoverhospitals.in/diseases/pediculosis/

7. Mumcuoglu K.Y., Zias J., Tarshis M., Lavi M., & Stiebel G.D. (2003). Body louse remains found in textiles excavated at Masada. Israel. J Med Entomol, 40(4), 585-587. https://doi.org/10.1603/0022-2585-40.4.585
8. Namibia Revenue Agency. (2023, July 17). Requirements - Importing second-hand clothing. *YouTube*. https://www.youtube.com/watch?v=7OhmfJ5ORBs
9. Niinimäki K., Peters G., Dahlbo H., Perry P., Rissanen T., & Gwilt A. (2020). The environmental price of fast fashion. *Nature Reviews Earth & Environment, 1*(4), 189-200. https://doi.org/10.1038/s43017-020-0039-9
10. Oduor M. (2025, April 28). *Harare City Council says bedbug infestation confined to only one locality*. Africanews. https://www.africanews.com/2025/04/28/harare-city-council-says-bedbug-infestation-confined-to-only-one-locality/
11. Pakistan Today. (2025, August 15). *Pakistan's rising poverty drives record surge in second-hand clothing imports, totaling $511 million in FY25*. https://profit.pakistantoday.com.pk/2025/08/15/pakistans-rising-poverty-drives-record-surge-in-second-hand-clothing-imports-totaling-511-million-in-fy25/
12. Rakhsanpour A., Khamesipour F., & Doosti A. (2021). Second-hand clothes, a new threat for acquiring parasitic infection. *Iranian Journal of Public Health, 50*(1), 211-212. https://doi.org/10.18502/ijph.v50i1.5083
13. Rana S. (2025, June 5). *Pakistan's poverty rate rises to 44.7% under new World Bank thresholds.* The Express Tribune. https://tribune.com.pk/story/2549678/pakistans-poverty-rate-rises-to-447-under-new-world-bank-thresholds
14. Raoult D., Reed D. L., Dittmar K., Kirchman J. J., Rolain J. M., Guillen S., & Light J.E. (2008). Molecular identification of lice from pre-Columbian mummies. *The Journal of Infectious Diseases, 197*(4), 535-543. https://doi.org/10.1086/526520
15. Robbins N., and Cowen L.E. (2025). Candida. *Current Biology*. *Department of Molecular Genetics, University of Toronto, Toronto, ON, Canada* https://www.sciencedirect.com/science/article/pii/S0960982225001265
16. Sacks R. (2026, March 24). *Unsafe levels of lead found in fast fashion children's clothes - and the habit that puts your kid at risk*. MSN News. https://www.msn.com/en-us/health/other/unsafe-levels-of-lead-found-in-fast-fashion-children-s-clothes-and-the-habit-that-puts-your-kid-at-risk/ar-AA1ZjCDd
17. The Economic Times. (2024, May 28). *Seoul govt finds high levels of toxic chemicals in Shein products.* https://health.economictimes.indiatimes.com/news/industry/seoul-govt-finds-high-levels-of-toxic-chemicals-in-shein-products/110497750
18. Tonti L. (2024, January 18). *It's the industry's dirty secret: Why fashion's oversupply problem is an environmental disaster*. The Guardian. https://www.theguardian.com/fashion/2024/jan/18/its-the-industrys-dirty-secret-why-fashions-oversupply-problem-is-an-environmental-disaster
19. United Nations Economic Commission for Europe. (2023, May 19). *United Nations will launch a study on global second-hand clothing trade and circular economy*. https://unece.org/circular-economy/news/united-nations-will-launch-study-global-second-hand-clothing-trade-and
20. United Nations Economic Commission for Europe. (2024). *Reversing direction in the used clothing crisis: Global, European and Chilean perspectives (ECE/TRADE/484)*. United Nations. https://unece.org/sites/default/files/2024-12/ECE_TRADE_484E.pdf

21. WITS. (2021a). *Worn clothing and other worn articles exports by country in 2021*. https://wits.worldbank.org/trade/comtrade/en/country/ALL/year/2021/tradeflow/Exports/partner/WLD/product/630900
22. WITS. (2021b). *Worn clothing and other worn articles imports by country in 2021*. https://wits.worldbank.org/trade/comtrade/en/country/ALL/year/2021/tradeflow/Imports/partner/WLD/product/630900
23. WITS. (2022a). *Worn clothing and other worn articles exports by country in 2022*. https://wits.worldbank.org/trade/comtrade/en/country/ALL/year/2022/tradeflow/Exports/partner/WLD/product/630900
24. WITS. (2022b). *Worn clothing and other worn articles imports by country in 2022*. https://wits.worldbank.org/trade/comtrade/en/country/ALL/year/2022/tradeflow/Imports/partner/WLD/product/630900
25. WITS. (2023a). *Worn clothing and other worn articles exports by country in 2023*. https://wits.worldbank.org/trade/comtrade/en/country/ALL/year/2023/tradeflow/Exports/partner/WLD/product/630900
26. WITS. (2023b). *Worn clothing and other worn articles imports by country in 2023*. https://wits.worldbank.org/trade/comtrade/en/country/ALL/year/2023/tradeflow/Imports/partner/WLD/product/630900
27. WITS. (2024a). *Worn clothing and other worn articles exports by country in 2024*. https://wits.worldbank.org/tarade/comtrade/en/country/ALL/year/2024/tradeflow/Exports/partner/WLD/product/630900
28. WITS. (2024b). *Worn clothing and other worn articles imports by country in 2024*. https://wits.worldbank.org/trade/comtrade/en/country/ALL/year/2024/tradeflow/Imports/partner/WLD/product/630900
29. World Health Organization. (2023, May 31). *Scabies*. https://www.who.int/news-room/fact-sheets/detail/scabies