Why do we iron clothes? Tracking its origins based on a sanitary hypothesis

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Abstract

While the task of ironing clothes is generally disliked and seen as a waste of energy, people continue ironing. There are no serious groups or movements against ironing, as it is a behaviour engraved in the collective mind. In this study, we consider it a cultural behaviour that is performed due to an underlying, historical reason that is yet unknown. The aim of this study, however, is to provide a historically appropriate reason for this task. A meta-analysis based on internet searches showed that people primarily iron clothes for aesthetic reasons, which is a non-satisfactory explanation. Some people, however, provided a hygiene-based motive. Based on this probable origin for the act of ironing, a historical review was conducted based on the premise of ironing to disinfect clothes. Some patents were found that dated back to the middle of the 19th century, so ironing had already been established to remove wrinkles at this time. Other clinical reports and recommendations suggested that ironing not only kills lice and nits on the clothes, it also disinfects them from the causative organisms of epidemic typhus and other louse-borne diseases. Thus, the use of ironing in early times, (i.e., before the invention of chemicals, such as pyrethroids, or in situations when there was a lack of water to boil the clothes, like war) demonstrates that hygiene is a plausible reason to explain the dissemination of this behaviour.

Keywords: ironing; cultural behaviour; lice; typhus; health history; hygiene; parasite; emerging diseases.

Introduction

According to a recent opinion poll in the United Kingdom, ironing is considered the most detested chore (*How much would you say you enjoy or dislike doing the following household chores?* 2017) even though the general population continues to iron their clothes. Ironing clothes takes many hours and consumes enough power to significantly increase a household's energy consumption. There are many recommendations about how to iron more efficiently. For example, ironing in large batches heats the iron fewer times *(Guidelines promoting energy efficency measures* 2012). Another report suggests that people should 'avoid ironing where possible' (Allwood *et al.* 2006), which is still a statement that assumes it remains necessary on certain occasions. In a world with increasing environmental concerns, however, energy waste is emphasized in every environmental organization. It is curious, then, why the act of ironing is never questioned and no groups are advocating for its elimination. It begs the question: why is it deemed necessary to iron clothes?

It is possible that ironing may be an example of a human behaviour that does not have a clear reason to exist. Explanations for these types of behaviours, like the origin of pork prohibition in Judaism and Islam or the causes of war between tribal groups, have been repeatedly pursued throughout history, resulting in some probable answers (Harris 1974). The aim of this study is to investigate the underlying reason for ironing. To assess why modern society continues to iron, a meta-analysis was conducted through internet searches. Also, a literature review was performed to see if the same reasoning for this task has been consistent throughout history.

Research

A meta-analysis of ironing motives

A meta-analysis was performed to discover why people iron their clothes. It was conducted through internet searches of appliance manufacturers, companies that offer ironing services, opinions in personal blogs, as well as other webpages. The results are shown in Fig. 1. (Supplemental material: 1. The repository of websites and the dates of entry).

Fig.1: Meta-analysis results: reasons for ironing clothes

While the results were not conclusive, the majority of people said that ironing is performed to improve the appearance of clothes. An aesthetic reason, however, is likely not a sufficient explanation for a task that is so tedious, expensive, and energy-consuming. The other minor reasons provided (e.g., care of clothes, smoothness, and identification of laundry errors) were also not plausible. Those who provided more practical reasons (e.g., odour removal and shrinkage control) were mainly the appliance manufacturers and the companies that offered ironing services.

The purpose of ironing for disinfection may be more important than it seems, as hygiene is so widespread these days. It is important to remember, however, that people

cater to their self-care significantly more than they did 500 years ago when even taking a bath was considered taboo. This 'disinfection' result from the meta-analysis led to a literature review that focused on hygiene.

A timeline of events

The origins of the ironing procedure are as obscure as the reasons behind it. As far back as ancient Greece, they used a heated cylinder for ironing clothes, and in early China, there was a heated, pan-like device that was applied over the clothes (Glissman 1970). During the Middle Ages that followed, there were no significant advances in ironing technology, except for a mushroom-shaped tool that smoothed linens, which was dated between the 8th and 10th centuries. It was found in the Viking site, Birka, in present-day Sweden (Hårdh 1998). It was not until the beginning of the Modern Age that the sad iron, which had a solid base that was heated before use, began to be widely used throughout Europe. In a 'Google Scholar' search for a 'sad iron' before 1900, several patents were dated to the middle of the 19th century when it was considered a smoothing tool (Adames 1852; Mcclure 1861). Years later, the box iron, which had a container in its base where hot material was inserted to keep the iron hot, began to circulate as well (Glissman 1970). The aim of ironing at that time, just as it is today, was to smooth clothes.

There were also some statements found to support the hygiene-based reasoning behind ironing. For example, an English medical officer in the War of Crimea (1853–1856) stated:

> '(…) the men were seriously infested with vermin, and, as water was scarce, I have seen the men ironing their clothing by rolling a 32-lb. shot over the garment placed on a flat stone.'

The ‘vermin’ he was referring to was body lice (Crawfurd 1913), which were a common issue in places, like war and prisons, where people who lacked hygiene were huddled together. The main problem with a lice infestation is surprisingly not the lice themselves, but the diseases that carry and transmit: epidemic typhus, relapsing fever, and trench fever (Badiaga and Brouqui 2012). The statement of ‘soldiers ironing’ suggests that ironing may have had a different use in the past as a tool to eliminate parasites and bacteria, which caused disease. An excerpt from the beginning of the 19th century discussed caring for people infected with typhus, and it emphasized the importance of changing the bed linens twice daily (Parkes 1829). Furthermore, the idea of ironing to eliminate parasites and bacteria was also suggested in the book, *Irons* (Alphin 1997).

Although electric irons were invented in 1882, it was not until the early 20th century that this device was selling on a large-scale. During those forty years, there were no significant improvements in ironing technology. After the First World War (WWI), advertisements for the electric iron were popular, and its use was widespread among the Western World (Seely 1882; Cowan 1976). During its peak sales, the electric steam iron was invented next (Shintaro 1918).

It was also found that during this time, there was clinical advice about controlling lice infestations. In Peru, for example, there was a study about ‘relapsing typhus’, which is known today as, relapsing fever (since the work mentioned ‘spirochetes’). In this study, steam irons were used to prevent the spread of lice and infection (Del Prado 1920). Years later, there was a statement that referred to body louse: ‘Garments can be disinfested with a domestic hot iron, attention being given to folds and pleats’ (Buxton 1940). In Spain, after the Spanish Civil War, the use of hot irons was also suggested as a treatment for delousing clothes (Clavero 1943).

Lice

After the war, when ironing was at its peak, lice were very common. Even Lenin considered the parasite to be a major enemy: 'Either lice will conquer socialism, or socialism will conquer lice' (Patterson 1993). The body louse (*Pediculus humanus humanus*) is a human parasite, including adults, nymphs, and nits, which needs clothes to live on and thrive. It only makes contact with the human body to feed, which may cause the infested human to suffer severe pruritus (Diaz 2006; Veracx and Raoult 2012). This parasite evolved from the well-known head louse *(Pediculus humanus capitis*) when humanity started using clothes (Toups *et al.* 2011).

The head louse has four different clades (i.e., types) with different geographical distributions. The clade A of the head louse, for example, is the only one that has a worldwide distribution (Light, Toups and Reed 2008). The body louse evolved from this specific clade, and it is also found across the globe. Although the body louse is not as commonly known as the head louse in the developed world, infestations may still occur. This will primarily occur in places that lack hygiene which causes the parasite to thrive, like refugee camps, homeless shelters, or jails in developing countries. In fact, this infestation is typically referred to as the 'vagabond's disease' (Boutellis, Abi-Rached and Raoult 2014). It is relatively easy to get rid of lice, however. They die from temperatures over 50ºC (Izri and Chosidow 2006), and this heat is necessary to be rid of the infestation. Just washing in cool water will be ineffective (Speare, Cahill and Thomas 2003).

Controlling body lice is important as it has proven to be a vector of three lethal diseases: epidemic typhus, relapsing fever, and trench fever (Badiaga and Brouqui 2012). While feeding, the body louse may also defecate, which expels an etiological

agent that can infect the human. Then, bacteria may enter the body through injuries, like those caused by scratching. For the louse to be infectious, it must also be infected by the specific etiological agent. That is, the bacterial infection can only be acquired when a louse bites an infected human. Therefore, no vertical transmission of lice can occur (i.e., when a louse is infected with the causative agent, it cannot pass the infection onto its offspring) (Ewald 1987; Marquam R. Oliver and Spach 1996).

Louse-borne diseases

The origin of epidemic typhus (*Rickettsia prowazekii*) is still debated. Some argue that it has been present in Europe for millennia and caused some of the major outbreaks in history, like the Plague of Athens during the Peloponnesian Wars. Others suggest that its origin is closer to the present due to its lethal relation between the etiological agent and the vector (i.e., body louse) (Conlon 2007). However, there is a consensus that the first documented typhus outbreaks began in the late 15th century when soldiers brought the disease to Europe after the crusades. Since then, multiple outbreaks have occurred. (See examples in Table 1.)

Year	Situation	Deaths (estimations)	Disease
1489	Siege of Granada	17000	Likely typhus (Conlon 2007)
1528	Siege of Naples	30000	Typhus (Conlon 2007)
1618-1648	30 Years War	10000000	Typhus and plague (Conlon 2007)
1742	Siege of Prague	30000	Typhus (Conlon 2007)
1812	Napoleon Russian Campaign	300000	Typhus and dysentery (Raoult *et al.* 2006)

1813	Napoleon German Campaign	219000	Typhus (Raoult *et al.* 2006)
1845-1849	Great Irish Famine	>340000	Typhus, typhoid fever and relapsing fever (Mokyr and Ó Gráda 2002)
1918-1922	Russian Post-war	3000000	Typhus (Patterson 1993)

Table 1. Confirmed and probable historical epidemic typhus outbreaks in Europe

Trench fever (caused by *Bartonella quintana*) was first described in WWI when all military fronts were heavily afflicted (e.g., 800,000 French soldiers perished from the illness) (Byam and Lloyd 1919). After WWII, however, the incidences of trench fever significantly decreased. Then, in the nineties, there was an upturn in the number of cases for the homeless population in developed countries. Currently, it is considered a re-emerging disease, and it is known as, 'urban' trench fever (Ohl and Spach 2000). Even though the disease was described just a hundred years ago, modern analysis techniques have identified the bacteria's presence in burial sites from 4,000 years ago. Therefore, it is classified as the first vector-borne infection that has ever been documented (Drancourt *et al.* 2005).

The etiologic agent (*Borrelia recurrentis*) of relapsing fever may have already been known by Hippocrates, who likely described an outbreak of this illness on the Greek island, Thasos, after a long winter (Yimer 2014). Historically, it has been suspected in some outbreaks, like the Yellow Plague around the year 550 A.D. and the 'Famine fevers' in the British Isles that lasted from the 17th to the 19th century. Alongside typhus, relapsing fever was identified in 1841 as being part of the 'Famine fevers' during a notable outbreak in Scotland (Bryceson et al. 1970). In WWI and subsequent years, it was responsible for five million deaths in Eastern Europe. In Serbia

alone, for example, 100,000 people died out of a total population of three million. Unlike the other two diseases detailed above, relapsing fever continued causing mortalities in places like North Africa or the Middle East until after WWII (Bryceson *et al.* 1970).

When examining the outbreaks of these diseases, it is clear that they primarily occur during times of war. This is not surprising since a lack of hygiene and overcrowding creates the perfect environment for a parasite, and therefore the diseases, to thrive.

Conclusion

It is not possible to affirm that the activity of ironing began for the purpose of eliminating parasites and disinfecting clothes. Even Ancient Egypt pleated clothes (Hall and Pedrini 1984), so the origin of ironing requires further investigation, as this study does not delve that far into history. In fact, the origin may be due to some other unknown reason, since ironing was primarily achieved through pressure back then without heat altogether. This ancient Egyptian procedure, if properly completed, could kill some parasites but it would not kill the underlying bacteria. To kill bacteria, there needs to be extreme heat (e.g., an average iron climbs between 180ºC and 220ºC).

In more recent periods, publications have been found that link the use of irons to pediculosis treatment, such as ironing bed linens, scarfs, or hats (Viovy A. 1999). There are also examples of publications that directly suggest ironing infested clothes at very high temperatures (Rodenzaal 1997; Campos *et al.* 2007). Of course, other prevention and treatment methods are provided, like the use of different chemicals, such as pyrethrins, namely. Mere centuries ago, however, people did not know how to concoct these chemicals through artificial synthesis. As the quote from the War of Crimea

mentioned above, people simply needed to iron their clothes in order to kill lice, and this was especially useful when there was a lack of water and resources.

Unfortunately, history may soon repeat itself. Louse resistance to antiparasitics has been demonstrated (Burgess *et al.* 1995; Mumcouglu *et al.* 1995; Burkhart and Burkhart 2000; Durand *et al.* 2007, 2012), and this renders chemical treatments ineffective. While this resistance has only been shown with head louse, the spread of resistant strains of body louse is highly probable due to its genetic similarity. The presence of the three louse-borne diseases described above has been confirmed among the homeless population of urban areas in developed countries (Brouqui *et al.* 2005), as well as among the jail populations and rural areas of developing countries (Raoult *et al.* 1998, 1999; Tarasevich *et al.* 1998).

Ironing as a tool to kill lice and bacteria may still be favourable in our society to avoid the spread of chemical resistance. Therefore, delousing and disinfecting also seem to be reasonable ways to explain the origin of our social aversion towards unironed clothes. If someone wearing a wrinkled shirt implies that they may have lice, (which may be infected with a lethal disease), the logical approach is to be repelled.

The likely reason for the widespread utilization of ironing may be an effort to control lice and the diseases they carry. These feared diseases, which spread when people are in need of basic hygiene care, had a significant historical impact. With the use of a heated iron, people not only eliminated lice but they also killed the microscopic causative agent. Hence, ironing could have been positively engraved in people's minds and transformed our modern thinking to naturally consider ironed clothing more aesthetically pleasing. This would explain why we still iron our clothes in the 21st century. People could have easily forgotten why they instinctually disliked wrinkled clothes but continued to iron anyway, despite their dislike for the task.

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