

## Hygiene practices in everyday life: Exploring the adoption and environmental implications of disposable gloves

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**Abstract:** The COVID-19 pandemic has led to increased use of disposable products, notably face masks and disposable gloves. While these items serve as protective barriers against health hazards, they also pose significant environmental risks due to their resource-intensive production and waste generation. This study explores the adoption of disposable gloves beyond healthcare, probing their use and significance in the daily lives of Norwegian consumers. Employing social practice theory, the research investigates the underlying reasons and ways Norwegian consumers incorporate disposable gloves into various practices, and how more sustainable alternatives could be promoted. The methods encompass mobile ethnography and focus groups with Norwegian consumers. The findings demonstrate that disposable gloves are used to reduce health risk and enhance hygiene in daily life conveniently, consequently increasing waste. Alternative methods for increasing hygiene, such as reusable and longer lasting products or hand washing, are perceived as less hygienic and less convenient. Conclusively, the study sheds light on the complexities of changing material-practice entanglements and offers insights for developing more sustainable hand hygiene practices.

### Introduction

This paper explores the use and understanding of disposable gloves, a subject that has become increasingly relevant during and after the COVID-19 pandemic. While previous research primarily examined their role in healthcare (e.g. Dodamani et al., 2020), the pandemic has heightened scrutiny of their environmental and health implications (Kutralam-Muniasamy et al., 2022; Singh et al., 2020). The study examines their adoption and meaning in the everyday lives of Norwegian consumers.

Disposable gloves are multifaceted artifacts. They symbolise and provide physical protection against health and social risks, yet they also present environmental challenges due to resource-intensive production and waste creation. Discarded gloves can release pollutants like microparticles, organic matter, and heavy metals, potentially affecting water and soil quality (Jędruchiewicz et al., 2021; Wang et al., 2022). Furthermore, allergies to disposable gloves have become increasingly common among individuals in occupations requiring frequent glove use (Hunt et al., 1995;

Rose et al., 2009), a trend that may extend to consumers as glove usage rises.

This complexity makes disposable gloves an intriguing artifact for social science research, complementing the predominantly natural science-oriented research on the topic. By adopting a social practice perspective, this study aims to contribute to broader discussions on sustainable and alternative hand hygiene practices, offering insights for social innovation.

The initial idea for studying disposable gloves first emerged over 15 years ago, inspired by an observation during one of the authors' daily commutes past a small bakery. He noticed that in the mornings, workers handled bread and cakes without gloves, but in the afternoons, they consistently wore disposable gloves. This sparked curiosity about the rationale behind such usage outside the healthcare sector - were gloves being used to protect the food, the workers, the customers, or for another reason altogether?

The topic re-emerged during the COVID-19 pandemic when the use of disposable gloves spread from the healthcare into everyday life

practices, resulting in increased usage. Consequently, the topic was included in the research project REDUCE, which aims to identify how plastic products are intertwined in everyday practices and measures to reduce unnecessary plastic use.

This study explores the broader implications of disposable glove usage, focusing on their transition from specialised healthcare settings to integral elements of everyday practices. By investigating the factors driving this shift and the various contexts in which disposable gloves are used, the research aims to address the environmental challenges associated with these products and inform policy for increasing the use of more sustainable alternatives.

The study is guided by the following research questions:

1. How do Norwegian consumers use disposable gloves in everyday life?
2. How can we promote the use of more sustainable alternatives?

The study employs mobile ethnography, where participants photographed everyday plastic objects, followed by visual focus groups discussing the functional, social, aesthetic, and economic roles of plastics. Before detailing the method, the paper briefly reviews practice-theoretical framework that contextualises disposable gloves as an everyday product, and their dual roles as health risk reducer and environmental risk producer. The results demonstrate that disposable gloves are used to increase hygiene and convenience, reducing health risks and giving consumers a sense of protection. Performing alternative practices, such as washing hands, using reusable gloves, or reducing use, are perceived as less convenient. The paper concludes with recommendations for policy interventions to promote hygiene practices that are more sustainable yet convenient and effective.

### *Social practice theory*

The transition of disposable gloves from the health care sector to everyday life, and their use in daily activities, can be explored through social practice theory, which considers the social, cultural and material aspects of disposable glove use.

Social practice theory provides a holistic conceptual framework for analysing everyday

life through the entanglements of material and social elements, defined as practices. A practice is a socially constituted and shared way of doing something, like washing your hands, that individuals perform (Cetina et al., 2001; Reckwitz, 2002). In practice-based analyses, the practice itself is the analytical point of departure, looking at what sort of materials (e.g., disposable and reusable gloves), forms of knowledge (expert knowledge about hygiene or routinised enactments of hygiene) and general understandings (e.g. social norms on hygiene) are used in performing actions.

We can differentiate between dispersed and integrative practices. Dispersed practices are widely spread across different sectors of social life, such as describing, ordering, following rules, explaining, or questioning (Schatzki, 1996, p. 91). Integrative practices, on the other hand, are more complex and are found in and constitutive of particular domains of social life, such as farming, cooking, business, or teaching practices (Schatzki, 1996, p. 98). In this context, hygiene is a dispersed practice, while disposable glove use is an integrative practice.

Focusing on practices as the primary unit of analysis allows us to explore their elements, relations, and interdependencies. For example, in our analysis, we demonstrate that hand hygiene and disposable glove use intertwine with various everyday activities like personal hygiene, cooking, eating, and childcare. According to Shove et al. (2012, p. 13), the elements of these practices change over time, and that the introduction of disposable gloves represents a new materiality in the evolution of these practices. The increase in the use of disposable gloves implies a change in hand hygiene practices across different and integrated practices. When practices and materialities are deeply entangled, it becomes even more challenging to enact change, such as re-introducing less environmentally damaging and longer lasting materials like reusable gloves or reducing the consumption of disposable gloves.

### *Disposable gloves as health risk reducer and environmental risk producer*

Many single-use hygiene products, including gloves, are multifaceted in their function. They reduce risk by protecting the body from

potential contaminants that pose health risks, such as bacteria and viruses, substances that are culturally perceived as unpleasant or unclean (Douglas, 2003[1966]), such as decaying food, soil or mud, as well as materials undesirable on the skin, such as paint or glue. On the other hand, these products pose environmental risks due to massive waste generation and resource-intensive production, as well as health risk due to allergies. Moreover, incorrect disposal might lead to nature pollution or in some cases microplastics pollution.

The use of disposable gloves has expanded over time, influenced by broader societal changes, and increasing emphasis on hygiene and risk management. The evolution of gloves in modernity might be understood within the context of a 'civilized risk society' (Beck, 1992). Disposable gloves were first introduced in the health sector with well-defined and strict rules aimed at protecting against infection. Later, they became common consumer goods in supermarkets, kindergartens and homes. Global production increased from 213 billion products consumed in 2017 to 420 billion pieces in 2021 (Koncept Analytics, 2013; Jędruchiewicz et al., 2021). During the pandemic, the demand for gloves in the health sector exceeded the supply, leading to over 700% increase in prices (Dolonen & Hernæs, 2021). In Norway, the increased use during the pandemic has led to initiatives from the official health authorities to reduce usage to only specific situations, and suggesting alternative ways of securing hand hygiene protection, mainly by washing hands. The slogan for 2024 hand hygiene day information campaign was "Gloves - only when needed!" (FHI, 2024).

Previous research (Wakefield-Rann et al., 2020a, b) highlights the importance of understanding how practices structure interactions between humans, microbes, and chemicals at home. However, there's a gap in understanding how disposable gloves have been integrated into everyday life—especially through the lens of social practice theory. This study fills this gap by examining the use and significance of disposable gloves consumers' daily lives, offering new insights into their roles in hygiene, leisure, and beyond.

## Method

The study employs a qualitative research methodology that combines mobile

ethnography with focus groups to explore the use and understanding of disposable gloves. In November 2022, three focus group interviews were conducted involving 10 Norwegian men and 15 women aged 17 to 74 years (average 42 years). Each group comprised a diverse mix of participants, including both women and men from single and multi-member households, with and without children. The primary objective of the study was to explore the use of plastic products in daily life and assess opportunities for their reduction. Before the focus group interview, each of the participants was asked to photograph plastic products they used in their daily lives within the three themes, childhood, hygiene and leisure. These photos were used to relate the discussions to concrete use situations. All the participants signed a written consent form, and the interviews were fully transcribed.

The interviews were designed to capture the participants' understandings of and experiences with using plastic products in various everyday contexts. During discussions on hygiene-related plastic use, the participants were divided into sub-groups based on gender to account for differences in hygiene product usage, particularly the use of menstrual products among women. In the men's sub-group, the conversation revolved around different types of hygiene products, including disposable gloves. The following analysis is primarily based on the discussions among the male participants.

## Results

The below analysis of the focus group data demonstrates that consumers' understanding, and use of, disposable gloves is characterised by inherent conflict between hygiene benefits and environmental risks.

### *Protection and health risk reduction*

Using gloves creates a physical barrier between the skin and the objects we touch. In the case of disposable gloves, the pollution on the outside of the gloves can easily be dealt with by discarding the gloves after using them. However, there is a risk of contamination when taking the gloves on or off, and the gloves themselves must be packaged in a way that prevents pollution. One of the participants talks about the complexities of hygiene practices: *"They [hygiene products] don't have to be packaged in plastics but they must be*

*hygienically clean, so that no impurities enter the package. Otherwise, it won't work as it is supposed to"* (Man, Focus group 1). The quote exemplifies the layers of product and actions that are needed to ensure a sufficient level of hygiene.

Although the level of hygiene varies between a medical setting, such as a hospital, and at home, we find that after the COVID-19 pandemic, there has been an increased focus on hygiene also at home, producing new forms of 'risk work' (Horlick-Jones, 2005). This concept involves negotiating risk levels, competing risks, and risk reduction within everyday life practices. The pandemic significantly complicated hygiene practices, and disposable gloves have emerged as one solution to manage this complexity. We find that there are mainly two shared meanings or understandings that frame the hygiene risk negotiations in the focus groups: convenience and disgust.

Several of the focus group participants said that they previously used reusable rubber gloves but had recently switched to disposable gloves, which was understood to be convenient. One of the participants said that *"I have a package lying on the kitchen counter at home. (...) I use them to clean the bathroom, the drain"*, which was confirmed by another participant who added: *"Yes, it's much nicer to use gloves for that"* (Men, Focus group 1). The group goes on discussing situations where gloves are convenient, such as giving children and pets medicine, dealing with bodily fluids, and using strong detergents and paint. Convenience is the state of being able to proceed with something without difficulty, often also without reflection, thus reducing the work needed to consider hygiene when performing these practices.

In addition to convenience, gloves are used to avoid what one of the participants frame as follows: *"you use it for hygiene stuff, like, the stuff that's a bit nasty"* (Man, Focus group 1). Avoidance of disease has long been theorised as the principal function of disgust (Oaten et al., 2009). Thus, experiencing disgust promotes the rejection of potential health threats, such as microbes found in spoiled food. Several of the participants framed their use of gloves as avoiding dirt, using them as *"protective equipment"*.

### ***Danger and environmental risk production***

The negative environmental effect of disposable gloves was secondary to the hygiene benefits of using them. One of the participants expressed this view: *"It think with hygiene, like, I think it's difficult using plastic, but it's for hygiene, and your hygiene is more important than being really sustainable (...)"* (Man, Focus group 2). Still, all three groups discussed reduction in use either by proposing multiple use products or alternative ways of performing the task.

Longer-lasting washable rubber gloves were discussed as an alternative; however, it was perceived to be less convenient and riskier because washing them might not get rid of all the pollutants. One participant said that *"The alternative is rubber gloves that you have to disinfect afterwards, and if you look at the carbon footprint of disinfecting, it might be just as good to wear a disposable glove that you throw away"* (Man, Focus Group 3), while another was asked why he did not use rubber gloves to which he answered that *"I've become more sensitive to it recently (laughs)"* (Man, Focus group 2). These quotes exemplify the moral struggle between convenient and environmentally friendly products. The literature on sustainable consumption has shown that convenience is often prioritised over sustainability, producing unsustainable consumption patterns (Shove, 2003).

Several participants were still positive that the increased use of disposable products during and after the pandemic would be countered by more environmentally friendly products with replaceable parts, as expressed by one participant: *There could come a counter reaction, though, as we saw with the reusable face mask, like; listen here, what we did during the start of the pandemic, we created a massive environmental footprint by preventing COVID-19, it was huge, and now we have to replace some of the products we started out using* (Man, Focus group 2). The group continued to discuss the potential of more reusable hygiene products, including gloves made of different materials.

An alternative practice of reducing health risk without producing the environmental pollution that comes from disposable gloves is to wash your hands. The participants agreed that after



COVID-19, using disposable gloves had become more common, like this participant said: *“I think it’s a bit funny, but after corona it has become really common to use rubber gloves”*, followed up by another who replied that *“washing your hands is as effective, nearly, right, you wash your hands after using the gloves as well. But I think the gloves have returned, I can’t remember using so many single use products before corona, maybe the culture...”* (Men, Focus group 2). Some of the participants had never worn disposable gloves, and surprisingly, during the discussions they became interested in where the other participants had bought them and how and why they used them, aiming to adopt similar practices at home. During these discussions, the underlying rationale seemed to be that those who used them wanted to be clean and be perceived as clean by others. Washing hands was not a sufficient measure to create the perception of cleanliness, like this discussion shows:

*Man 1: If I’m making dinner for more people and they see that you wear gloves, they might feel that, okay, he is very hygienic and...*

*Man 2: I follow you, I totally agree*

*Man 3: It’s just become like that*

*Interviewer: To show that...*

*Man 1: It’s important to appear proper. It’s important to be hygienic [when cooking]* (Men, Focus group 3).

The increase in single-used hygiene products during the COVID-19 pandemic has resulted in a negotiation between health and environmental risks in everyday hygiene practices. As the analysis shows, consumers use gloves to deal with pollutants in a convenient way and to avoid disgust. Alternative products with longer lifespans, such as rubber gloves, and alternative practices such as washing hands, are seen as insufficient to that end. This indicates that a change in the material element of hygiene practices, the introduction of gloves, has changed the general hygiene understanding. A suggestion taken from our material is to further examine the role of single and multiple use products for changing overall societal understandings of hygiene.

## Discussion and conclusions

This paper has explored the journey of disposable gloves from their origins in the healthcare sector to their adoption in everyday consumer practices, examining how they are

integrated into various routinised actions. By unpacking this shift, we provide insight into why disposable gloves are often preferred over reusable alternatives with longer lifespans. The focus group data shows that disposable gloves are preferred above both longer lasting materials and more environmentally friendly practices such as washing hands mainly due to convenience and avoidance of disgust.

On a general level, the evolution of disposable gloves from a specialised medical tool to a common household item reflects a shift in social and cultural norms of what it means to be clean and hygienic. There is thus a need for alternative products or competences that are more sustainable yet convenient and hygienic.

Policy interventions could include:

- Public education that highlights the shortcomings of improper use of disposable gloves
- Promoting and easing access to reusable gloves, hand washing, or sanitisers
- Extend policies against single-use plastics to limit sales of disposable gloves to specific stores like pharmacies
- Labelling to inform about the plastic content, risk of allergic reactions and proper disposal for recycling
- Introducing waste management, recycling and clean-up obligations for producers.
- Offer grants for companies to develop and promote more sustainable single use alternatives to disposable gloves

Importantly, efforts to reduce disposable gloves use must consider the broader context in which this product is embedded. Simply promoting alternatives to disposable gloves might not be sufficient; instead, it may be necessary to address the underlying practices, and the understandings attached to them – in this case the understanding of proper hygiene. By understanding and combining the factors that drive the use of disposable gloves and the contexts in which they are used, policymakers and practitioners can develop targeted interventions that encourage more sustainable hand hygiene practices.

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