

**Research Article****THE IMPACT OF BEAUTY BLENDER HYGIENE PRACTICES ON BACTERIAL ACCUMULATION:  
PRACTICAL STUDY OF SELECTED PARTICIPANTS IN SHARJAH****Fatima K. Kashwani and \*Lara A. Razouk**

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**Abstract**

This comprehensive research study delves deep into the realm of beauty blenders and the associated hygiene practices among participants in Sharjah, UAE. Addressing a significant research gap regarding the potential bacterial buildup on beauty blenders and the crucial importance of hygiene in skincare and overall health, the study employs a multifaceted mixed-methods approach. By integrating quantitative surveys and qualitative observations, including a bacterial swab experiment, the research engages a purposive sample representing diverse demographics in Sharjah. The quantitative surveys aim to investigate participants' beauty blender usage frequency, cleaning habits, and awareness of hygiene practices in skincare. Complementing the quantitative data, qualitative observations, particularly the bacterial swab experiment, provide in-depth insights into the daily use of beauty blenders by participants and shed light on the potential risks associated with bacterial accumulation. Through this thorough investigation, the study seeks to emphasize the significance of proper hygiene practices in maintaining healthy skin and mitigating health risks linked to beauty blender accumulation. By contributing to the existing body of knowledge on cosmetic tool hygiene, this research not only aims to raise awareness about potential risks but also advocates for informed and effective hygiene practices to promote skin health and overall well-being among consumers in Sharjah and beyond.

**Keywords:** Make Up, Contamination, Beauty Blender, Beauty sponge, Beauty applicator.

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**INTRODUCTION**

Makeup, the most common form of self-expression, is part of the daily routine for people of all ages and has been for centuries. Its wide popularity is related to its ability to convey personal style and identity. This behavior occurs in a variety of places, including restrooms, public areas, and travel, and can promote the growth of dangerous microorganisms in cosmetics and related beauty products. Contamination typically occurs because products and tools are not cleaned or are used well past their expiry date (Bashir & Lambert, 2020). Through the study conducted by scientists from Aston University in Birmingham, the investigation focused on contamination from donated makeup products such as lipsticks, lip glosses, eyeliners, mascaras -those that come into direct contact with the face and are then enclosed again in their tubes. Additionally, the study included Beautyblenders, primarily used for applying foundation. The findings indicated that between 79 to 90 percent of the tested makeup exhibited detectable levels of bacteria, with E.coli being the predominant strain (Bashir & Lambert, 2020). The presence of bacterial organisms in contaminated products could lead to skin irritation, conjunctivitis along other serious health problems, considering that makeup is usually applied to sensitive areas of the face, such as the eyes or lips. The risk of health consequences related to microbial contamination due to Escherichia coli and other bacteria, raises concerns as to whether the skin is exposed to harmful pathogens and then at risk for infections.

**Statement of the Problem**

This research dives into the impact of Beautyblender hygiene practices on bacterial accumulation among selected participants

in Sharjah, UAE, filling a notable gap in existing studies. Despite the global popularity of Beautyblenders, little research has focused on the hygiene habits of users in Sharjah. Previous studies have examined broader issues of bacterial contamination in cosmetic tools but have not explored the specific cultural and environmental factors influencing Beautyblender hygiene in this region. The study aims to fill this gap by conducting a practical investigation and aims to provide insights that can inform targeted interventions for promoting better health outcomes among Beautyblender users in Sharjah.

**Objectives of the Study**

The main objective of this study is to investigate the impact of Beautyblender hygiene habits on bacterial buildup. It intends to specifically assess the level of bacterial contamination on Beautyblenders used with varied hygiene standards, such as cleaning frequency and storage ways. The research aims to identify the types of bacteria that commonly accumulate on Beautyblenders and their potential risks to the skin as well as see Beautyblender spreading awareness about proper hygiene practices and their impact on Maintaining healthy skin.

**Research Questions**

The researchers aim to answer the following questions:

- How much bacteria have accumulated on Beautyblenders used with various hygiene practices in the Sharjah area?
- What bacterial species are commonly found on Beautyblenders in the Sharjah area, and what potential skin concerns do they pose?
- To what extent can the various cleaning approaches for Beautyblenders decrease bacteria buildup?

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## Significance of the Study

This study provides evidence-based information on sanitary practices to empower individuals and promote a safer and healthier beauty routine that promotes personal care and overall well-being. The study examining the influence of Beautyblender hygiene practices on bacterial accumulation on selected participants in Sharjah has significant implications for both personal health and cosmetic operations. Because Beautyblenders are increasingly popular for cosmetic applications, it is crucial to observe sufficient hygiene practices when using them. With our practical study on participants within our region, we will be able to highlight how crucial it is for those who use the Beautyblender on a daily basis to maintain perfect hygiene in order to reduce the danger of bacteria growth.

## Structure of the Study

The initial chapter focuses on the topic of the study and states the problem, it presents the study's objectives, research inquiries, and its significance. Moving to the second chapter, it involves an exploration of existing theories related to bacterial accumulation and brings up insights from prior research. Furthermore, the chapter includes an in-depth analysis of the various hygiene aspects associated with Beautyblender practices, incorporating considerations of different brands and materials. To enhance understanding, the chapter draws comparisons between recent studies and experiments, referencing examples and theories from both outside studies and self-conducted research on Beautyblender hygiene practices.

## LITERATURE REVIEW

Beautyblenders have proved to be an essential tool in the makeup routine, making cosmetics applied effortlessly and beautifully. However, bacteria can accumulate on these sponges, raising questions about the effect of this practice upon skin health. This literature review examines earlier studies regarding Beautyblender hygiene, methods of cleaning and consumer awareness and practices especially in the Sharjah region.

### Definition and Purpose of Beautyblenders

The Beautyblender, an edgeless and reusable cosmetic sponge applicator, is designed to achieve a flawless makeup blend with its aqua-activated property that imparts an airbrushed finish while minimizing product absorption (Beautyblender, n.d.). Widely used in the makeup industry, it has become an essential tool known for enhancing makeup application and contributing to a professional, airbrushed look. The success of the Beautyblender brand has led to the term "Beautyblender" being commonly used as a generic name for similar makeup sponges, showcasing its significant impact on the beauty and cosmetics landscape (Beautyblender, 2021).

### The Evolution of the Beautyblender

**Early Makeup Tools (Ancient Egypt):** In Ancient Egypt, makeup was not solely for cosmetic enhancement but rather a cultural and spiritual practice (Black, 2021). Egyptians developed sophisticated beauty rituals and techniques, using kohl to highlight the eyes and natural colorful pigments for

eyeshadow and lip color. Makeup had a symbolic meaning and represented protection and healing associated with the falcon god Horus (Myers, n.d.). Beyond grooming, makeup was associated with religious beliefs and gave it a spiritual aspect. The timeless interest of expressing individuality, social identity, and spirituality through makeup in ancient Egypt is reflected in today's beauty practices, demonstrating the enduring legacy of this ancient civilization. The use of makeup dates back centuries, with ancient Egyptians employing small animal skins or palm leaves for makeup application (Peng, 2023).

**Max Factor's Innovations (1920s):** Max Factor was a famous makeup artist and cosmetics entrepreneur who made significant contributions to the beauty industry in the early 20th century (*The Max Factor Story | Max Factor, n.d.*). Factor was the one who introduced a wedge-shaped latex sponge for precise foundation and powder application in the 1920s (Peng, 2023), revolutionizing the application of something that has been around for centuries.

**DIY Solutions and Challenges:** As the 20th century progressed, sea sponges gained popularity for their soft texture, offering a flawless finish (Peng, 2023). Before commercially available options, people resorted to DIY solutions like using foam from household items. However, these lacked the durability and precision of professional sponges.

**Rea Ann Silva and the Beautyblender (2003):** In the early 2000s, makeup artist Rea Ann Silva revolutionized the industry with the Beautyblender (*Our Story of Success | Beautyblender® - One-of-a-kind Stunning Makeup, n.d.*). The teardrop shaped and latex-free sponge was characterized by its unique texture for flawless blending, gaining worldwide popularity. Its success led to many other versions from other companies, and today, makeup sponges come in various shapes, sizes, and materials, commonly using synthetic foam for a perfect balance of texture, durability, and ease of cleaning.

### Impact on the Makeup Industry

The Beautyblender has made a significant impact on the makeup industry, popularizing professional makeup techniques and transforming the way people apply makeup ("Rea Ann Silva: The Woman Behind Beautyblender," 2020). The unique design and functionality have been well received by both makeup professionals and amateurs. According to Forbes, Beautyblender, the makeup sponge company, achieved sales of \$175 million in 2019 (Voytko, 2021), approximately equivalent to 640 million AED. This success solidifies Beautyblender's position as a thriving force in the market.

**The Beautyblender's Cult Following:** The rise of social media and makeup tutorials has had a clear impact on the popularization of Beautyblenders. Through the help of platforms like Instagram, YouTube, and TikTok, makeup tutorials have evolved into visually appealing and entertaining segments that showcase innovative application techniques along with product recommendations ("Rea Ann Silva: The Woman Behind Beautyblender," 2020). This transformation has turned makeup tutorials into a powerful branding strategy that many businesses rely on for marketing. The purpose of tutorials is not to only educate and inspire but also to serve as an effective promotional tool, contributing to the widespread

recognition and success of Beautyblenders in the beauty industry. The rise of Beautyblender coincides with the growing popularity of makeup tutorials on social media, where makeup tutorials have become an important vehicle for education (“Rea Ann Silva: The Woman Behind Beautyblender,” 2020), inspiration, and product discovery, transforming the way the beauty industry communicates with consumers.

**Influence on Other Makeup Sponge Variations:** Many brands have attempted to replicate the success of Beautyblenders by offering affordable alternatives and new designs (Voytko, 2021). Replicates have flooded the market, all claiming to give you the same perfect results. However, not all imitations meet the standards of the original. Several notable reproductions and alternatives have become popular, offering a balance between quality and affordability. Notable candidates include Real Techniques Miracle Complexion Sponge and EcoTools Perfecting Blender Duo (BondsofBeauty, 2018). These alternatives aim to mimic Beautyblender's performance while supporting a variety of budget preferences. In response to the growing demand for makeup sponges, established brands and new entrants alike continue to introduce their own unique spins on the concept. From silicone-infused sponges to multifunctional designs, the market has become a place of creativity and innovation.

### Relevance of Study in Sharjah

The relevance of the study on the influence of Beautyblender hygiene practices on bacterial accumulation in Sharjah is to fill the gap in existing research. Limited research has been conducted on this topic in the Sharjah context. Therefore, it is important to investigate hygiene practices associated with Beautyblenders and their potential impact on bacterial accumulation in selected participants in this geographic region.

**Variations Across Different Regions:** The use of Beauty Blenders is a global trend, with people all over the world using these makeup tools for similar purposes. However, the differences between different regions, especially in cultural contexts like Sharjah, lead to interesting considerations. The cultural importance of the hijab and abaya in this region imposes unique restrictions on self-expression through clothing. These garments are conservative and cover most of the body, limiting women's options for fashion expression (Team, 2022). As a result, Arab women often use makeup as a means of self-expression and creativity. Considering that Arab women may use makeup as a form of personal expression and may wear makeup more frequently due to cultural factors, BeautyBlender hygiene practices may vary with diverse cultural norms. It is quite possible that there may be a difference in comparison.

### Importance of Hygiene in Cosmetic Tools

Maintaining the hygiene of cosmetic tools is important to preserve skin health and avoid many alarming consequences. Unsanitary cosmetic tools transfer dirt and bacteria that build up during application from your face to your makeup and back into your makeup, which can lead to clogged pores and breakouts. Ignoring tool hygiene can even lead to serious infections, such as staph infections associated with shared tools (Escobar, 2022). Its effects go beyond skin issues and affect the way you apply makeup, eye health, and overall aesthetic results. Neglecting hygiene can also lead to physical

discomfort and aesthetic problems, such as your eyelashes breaking or a lump forming in your eye. The effects go beyond immediate concerns and have long-term effects on skin health, as dirty tools expose the skin to oxidative stress, which can lead to premature aging.

**Types of Bacteria Found:** The study conducted by the School of Life and Health Sciences at Aston University in Birmingham revealed concerning findings regarding the types of bacteria present in makeup products, particularly BeautyBlenders. The analysis of samples from various beauty products donated by U.K. users demonstrated that 70–90% of these products were contaminated with bacteria. The bacteria identified in the study included *Staphylococcus aureus*, *Escherichia coli*, and *Citrobacter freundii* (Bashir & Lambert, 2020).

**Health Implications:** *Staphylococcus aureus*: *Staphylococcus aureus* is a bacterium that affects a wide range of various parts of the body. These effects primarily cause skin infections that result in boils, blisters, and redness. They are especially visible on the face, mouth, and nose area. In people who are breastfeeding, *Staphylococcus aureus* can cause mastitis, characterized by inflammation and abscess formation within the breast (Boakes *et al.*, 2018). Bones can also be infected, causing inflammation and pain called osteomyelitis. Respiratory diseases, including pneumonia and abscess formation, can occur in the lungs, and heart valves can be damaged, leading to heart failure. In severe cases, *Staphylococcus aureus* can enter the bloodstream and cause sepsis, or septicemia, a serious, life-threatening infection (Bush 2023). *Escherichia coli*: *Escherichia coli* (*E. coli*) can cause a variety of health problems. *E. coli* infections affect the gastrointestinal tract and often cause gastroenteritis with symptoms such as diarrhea (sometimes even bloody diarrhea), abdominal pain, nausea, and vomiting. In rare cases, *E. coli* infections can cause hemolytic uremic syndrome (HUS), a serious condition that leads to the destruction of red blood cells, low platelet counts, and kidney failure (Bush & Vazquez-Pertejo, 2023). *Citrobacter freundii*: *Citrobacter freundii* can lead to infections in individuals with a weak immune system. Consequences include urinary tract infections, respiratory infections, and potentially life-threatening bloodstream infections. In healthcare settings, it may exhibit antibiotic resistance, complicating treatment (Liu *et al.*, 2018).

**Factors Influencing Bacterial Growth:** According to a study conducted at Aston University in the United States, researchers looked at the makeup sponge (“The Deadly Superbugs Lurking in More Than Nine in Ten Make-up Bags,” 2019). These sponges, known for their use in skin foundation products, have been found to have the highest levels of potentially harmful bacteria. Surprisingly, even though the majority (93 percent) of these applicators had never been cleaned, more than two-thirds (64 percent) had fallen on the floor during use. This study found that these BeautyBlender products were particularly susceptible to contamination. This susceptibility comes from the common habit of leaving it damp after use, creating an ideal breeding ground for harmful bacteria. To make matters worse, people usually apply makeup in the bathroom, which is rife with bacteria.

### Existing Research on Beauty Tool Contamination

Beauty tool contamination has been illuminated by research conducted by Bashir & Lambert, (2020). The study discovered

distinct kinds of microorganisms, mainly bacteria and fungi, on used Beautyblenders. These findings are indicative of the potential health hazards represented by unwashed beauty implements and reveal that they give rise to problems with hygiene which have yet to be studied. Bashir & Lambert, (2020), research becomes an essential reference in the identification of microbial risks associated with Beautyblenders, and from which other studies spring to analyze cleaning methods or hygiene standards.

### **Geographic and Cultural Variations in Hygiene Practices**

**Studies in Similar Climates:** Studying regions with similar climates to Sharjah will shed some light on those environmental factors that influence the growth of bacteria in Beautyblenders. A climate like Sharjah's was studied by Jones *et al.* (2018), bringing forth data of the obstacles where Beautyblender hygiene is concerned based on temperature and humidity considerations in particular. With this research, the hygiene suggestions can be changed to fit circumstances and climate.

**Cultural Influences on Beauty Practices:** Chen *et al.* (2020) also points out that cultural attitudes toward hygiene strongly influence beauty procedures. The study stresses the importance of culturally specific interventions to successfully target hygienic practices. A basic understanding of how cultural factors affect the practice of hygiene is a prerequisite for devising strategies which fit in with local culture. Chen *et al.*'s (2020) findings add to the larger discussion about cultural considerations in beauty tool hygiene, serving as a point of departure for understanding cultural nuances.

### **Recommended Cleaning Practices**

**Industry Guidelines:** There are basic industry guidelines, set out by the beauty and makeup associations. Based on expert consensus and best industry practice, such guidelines provide a reference point for designing effective cleaning methods. Nevertheless, it is also necessary to point out that these suggestions must pass the test of application before they can be proven practical and effective (Beauty Industry Association, 2021). Therefore, the difference between theoretical guidelines and consumer behavior must be defined for further investigation to reduce this gap in hygienic recommendations.

**Home Cleaning Methods:** People use different techniques in an effort to retain the beautiful appearance of their Beauty Home cleaning methods are relied on by consumer blenders. A study by Smith *et al.* (2021) considers these home cleaning habits in terms of how common they are and their effectiveness. The study investigates the diversity of techniques used by consumers and provides practical guidance about home cleaning. Besides guiding the design of hygiene guidelines, this research also pinpoints gaps in knowledge and areas for consumers to improve.

### **Efficacy of Cleaning Methods**

**Effectiveness in Bacterial Reduction:** Evidence-based recommendations require comparative studies of the effectiveness of different cleaning methods. For example, work by Black *et al.*, (2023) describes a comparison of bacterial reduction among various cleaning procedures including washing with soap versus use of specialized cleansers.

Knowing the comparative effectiveness of these methods helps to establish reasonable hygiene standards. The knowledge gathered here is essential in recommending particular cleaning protocols that achieve optimal bacterial reduction while minimizing damage to Beautyblenders.

**User Compliance:** In general, then, studying Beautyblender cleaning means reading industry guidelines; learning how consumers clean when at home; assessing the effectiveness of different methods and applying it to several types or materials used in the process(es); exploring whether user compliance affects efficacy. By taking a multifaceted approach, we will understand the challenges and opportunities of maintaining hygiene comprehensively. From this foundation, evidence-based and practical recommendations to countries can be made.

### **Knowledge of Bacterial Accumulation**

**Awareness Levels in Sharjah:** A survey has been conducted by the Chaturvedi, & Purohit, (2022) to determine residents' level of awareness about bacterial accumulation on Beautyblenders. The purpose of this survey is to fill the local people's knowledge gaps. It is necessary to understand how well informed people in Sharjah are about the microbial risks associated with Beautyblenders, so that educational interventions can be more specifically tailored.

**Perception of Hygiene Importance:** The researcher Kim *et al.* (2019) investigates individuals' attitudes regarding the importance of cleanliness in their beauty regimen. The study uncovers the aspects that influence judgments about the cleanliness of Beautyblenders, taking into account these perspectives. This knowledge is essential to the development of education that captures people's attitudes and beliefs in Sharjah. As a result of Kim *et al.*'s research, efforts to stress the importance of hygienic activities will be directed at making educational messages match with local concepts and thought process.

### **Compliance with Recommended Hygiene Practices**

**Barriers to Compliance:** Designing effective interventions requires identification of barriers to compliance. Wong *et al.* (2022) explore the cultural, economic and logistical factors which could be deterrents to individuals in Sharjah following recommended hygiene practices. These barriers learned from community assessments provide a basis for designing interventions that tackle local obstacles. Ensuring adherence to recommended hygiene practices involves addressing various obstacles, including economic, cultural, and logistical factors. The affordability of hygiene goods significantly impacts cleanliness, particularly for low-income households (Smith *et al.*, 2019). Cultural norms also shape personal cleansing regimens, sometimes conflicting with recommended protocols (Jones & Brown, 2020).

**Education and Outreach Efforts:** WHO's 2020 campaign on the hygiene of beauty tools is an example. An examination of their tactics and effectiveness gives us some understanding of how to develop culturally sensitive, effective campaigns in Sharjah. Through the analysis of successful examples abroad, local interventions can be tailored to fit into Sharjah's own cultural climate, avoiding any negative impact on education

and indeed paving a path for drastic improvements in BeautyBlender hygiene standards.

## METHODOLOGY

This study's principal goal is to look at the connection between using BeautyBlenders and bacterial buildup, particularly in the context of a subset of participants in Sharjah, United Arab Emirates. In Sharjah, a region with little prior study on this issue, this methodological approach is intended to gather primary data, providing insights into how BeautyBlender hygiene habits may impact bacterial buildup among participants.

### Description of Data

Primary data was attained through a dual methodological approach consisting of both qualitative and quantitative research techniques. Qualitative data was executed through a survey distributed via Google Forms, yielding a total of 102 responses, of which 40 were Emiratis. The survey commenced first by inquiring about demographic variables such as age and nationality, subsequently incorporating seven questions comprising a combination of multiple-choice and Linear scale questions. These queries explored the BeautyBlender usage patterns, cleaning methodologies, and preferences of the participating individuals from Sharjah. "How often do you clean your BeautyBlender?" "Do you usually use soap or a specific cleaning solution to clean your BeautyBlender?" "Have you ever experienced any skin issues or breakouts that you suspect could be related to your BeautyBlender?" are samples of the survey questionnaire. Our quantitative study component includes collecting and analyzing numerical data on bacterial contamination. This was accomplished using an experimental approach in which a commonly used BeautyBlender was swabbed onto an agar plate and the resulting bacterial growth was seen. This section of the study focuses on data, measurements, and statistical analyses to understand the various types and quantities of bacteria found on BeautyBlenders. A comprehensive understanding of BeautyBlender contamination may be obtained by combining qualitative and quantitative techniques, considering participants' behaviors as well as the presence of germs on the BeautyBlenders themselves.

### Methodology

To fulfill the research objectives, an experimental approach was undertaken, focusing on investigating the contamination of BeautyBlenders within the Sharjah area. Approaches from qualitative and quantitative research are included in the study's structure. The research design employed is cross-sectional, aiming to capture a snapshot of BeautyBlender contamination within a specific timeframe and location. The target population for this study includes individuals who utilize BeautyBlenders in Sharjah. The participants selected for the study were women aged 10-25, and the convenience sampling method was employed to recruit them. Data collection procedures involved two main methods:

#### 1. Survey

A Google Forms survey was designed to gather information about participants' BeautyBlender usage habits, allowing participants to respond conveniently online. The survey

included inquiries regarding frequency of BeautyBlender washing, purchase patterns for new ones, preferred cleaning methods, and related practices.

2. Experimental Swabbing identify the bacterial contamination, a BeautyBlender was swabbed onto an agar plate. The swabbing process involved pressing the BeautyBlender onto the agar surface to transfer bacteria onto the plate. In this way, the agar plates were brooded to encourage bacterial development, which was afterward analyzed to recognize the sorts of microorganisms show. The plate was left in a dark area for a period of one week before being able to further explore the content.

The instrument utilized for information collection, more particularly the swabbing method, underwent validation processes to ensure its effectiveness in measuring the intended constructs and reliability over time. The approval methods included evaluating the exactness and consistency of bacterial exchange onto agar plates through repeated swabbing and analysis. These validation steps were essential to establish the instrument's validity and reliability in accurately detecting bacterial contamination on BeautyBlenders. Furthermore, a laboratory assistant played a role in ensuring the accuracy of our research. The laboratory assistant was responsible for administering the preparation and maintenance of laboratory equipment, conducting the experiment, and maintaining Their expertise was important in validating our data collection instrument, particularly the patting method used for bacterial analysis. The laboratory assistant monitored the patting process to prevent external contamination, thus enhancing the reliability of our testing procedures. Their involvement contributed significantly to the overall quality and credibility of our research findings.

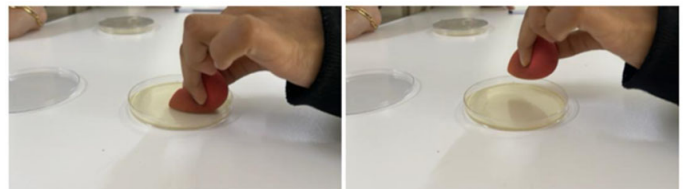


Figure 1. Swapping of the BeautyBlender on Agar plate

### Rationale of the Study

The rationale of the study is grounded in several key considerations that justify the chosen methodologies, tools, and platforms:

Based on its established reliability and broad acceptance as a source of detection of bacterial contamination, it was decided to use the swab strategy as an essential resource for collecting information. The method used agar plates, which are nutrient gel placed on Petri dishes for bacterial and fungal growth in microbiological research facilities, to sample bacteria from BeautyBlenders directly. The significance of agar plates in microbiology cannot be overstated. With approximately 85 million agar plates used annually in the UK, agar plates have revolutionized the sector since its inception in the 1880s (The Agar Plate, n.d.). They have played a crucial role in the isolation and identification of several microbes, which has resulted in important medical discoveries and developments. For example, without agar plates, Fleming may not have been able to identify penicillin, and the development of antibiotics may not have been possible (The Agar Plate, n.d.). On agar

plates, bacteria grow in collections of cells called colonies. Each colony is composed of one bacterium or several bacteria. Although individual cells are too small to be seen, the masses of cells can be observed (Lee, 2021).

In the context of this study on BeautyBlender contamination, agar plates were indispensable for growing bacteria from swabbed samples. This allowed for the analysis and identification of the types of microorganisms present on BeautyBlenders. To ensure the validity of the information collected on bacterial presence, the use of agar plates is essential due to it being an effective microbiological method. In order to properly address the research questions and goals of the study, this choice is essential. Google Forms was chosen as the platform for survey data collection. Accessibility, ease of use and the ability to collect responses remotely have been considered in this decision. Data collection from participants on their use of BeautyBlenders and related practices has been made easier by Google Forms. In addition, the questions in the survey hold specific significance to the research on the contamination of BeautyBlenders in the Sharjah area:

**Age Range:** Understanding the age demographics of participants is crucial for analyzing different hygiene practices related to BeautyBlenders across various age groups.

**Nationality:** Participants' nationalities provide insights into potential cultural influences on BeautyBlender cleaning habits, contributing to a more comprehensive understanding of contamination habits.

**Frequency of Cleaning Beauty Blender:** How often do you clean your BeautyBlender?: For the purpose of precisely calculating the overall contamination over time, cleaning frequency is important.

**Method of cleaning:** Do you usually use soap or a specific cleaning solution to clean your BeautyBlender?: The effectiveness of the cleaning routine to maintain hygiene can be determined by identifying the type of cleaning product used.

**Storage if beauty blenders:** How do you store your BeautyBlender between uses? Storing methods impact cleanliness, making this question important for determining if contamination could be storage related.

**Skin Issues and Breakouts Potentially Linked to BeautyBlender Usage:** Have you ever experienced any skin issues or breakouts that you suspect could be related to your BeautyBlender?: This question evaluates the need for better hygiene practices as well as the possible health effects of contaminated BeautyBlenders.

**Replacement Frequency of BeautyBlenders:** How often do you replace your BeautyBlender?: Understanding replacement frequency indicates awareness of product lifespan and hygiene concerns.

**Duration of Current BeautyBlender Usage:** How long have you had your current BeautyBlender?: This question provides specific information about the age of BeautyBlenders in use, which is crucial for assessing contamination risks.

**Odor Concerns in BeautyBlenders:** Have you ever noticed any strange odor coming from your BeautyBlender?: Odor

detection is an indicator of possible contamination problems that triggers additional need of research into cleaning and storage procedures.

**The Use of Likert Scale:** Furthermore, the use of a Likert scale in this survey will add value to the research method. The Likert scale provides a structured format for participants to express their attitudes and behaviour when it comes to BeautyBlender hygiene practices. The response options on this scale ranges from "Not at all" to "frequently", which allows for a complex and detailed data collection, making analysis easier. Because the depth of responses enables us to obtain participants' perceptions and behaviors, we are better able to understand the factors influencing the contamination of BeautyBlenders and can make conclusions about questions such as why and how bacterial contamination occurs.

The research design was deemed appropriate for addressing the study's objectives. Specifically, the cross-sectional design allowed for data collection at a single point in time from a specific population (women aged 10-25 using BeautyBlenders in Sharjah). This design choice facilitated a snapshot view of BeautyBlender contamination within the study area. The research's contribution to filling in current gaps in the literature is what makes it significant. The study highlights the significance of following appropriate cleaning and maintenance procedures for beauty tools by concentrating on the bacterial contamination of BeautyBlenders. Additionally, the research provides empirical data on BeautyBlender contamination in a specific demographic (women aged 10-25 in Sharjah), further enriching the field's understanding of hygiene practices related to beauty tools.

### Procedure of the Analysis

Google Forms provides a strong platform for academics who want to delve deeper into the subject. data analysis, uncover trends, and extract crucial insights from obtained information. Participants may offer better structured and clear feedback because of the platform's various possibilities, including configurable filters and criteria. Beyond the standard analytic techniques, we used an experimental strategy in our study where a BeautyBlender was placed on an agar plate and the plate was then incubated for almost five days at a consistent temperature. This technique made it easier to see and analyze bacterial growth under a microscope, which greatly enhanced the quality of our study results. Furthermore, charts and graphs provided a clear visual representation of the survey results' structure and presentation.

### Conclusion

In conclusion, our study utilized a dual methodology of qualitative surveys and quantitative bacterial analysis to investigate BeautyBlender usage and bacterial buildup in Sharjah, UAE. The chosen methodologies, including Google Forms surveys and agar plate swabbing, were grounded in reliability and relevance to our research objectives. The significance of our methodology lies in its contribution to filling gaps in the literature and ensuring the rigor and validity of our findings. Our analysis procedures included data analysis on Google Forms and microscopic examination of bacterial growth on agar plates. This methodology sets the stage for discussin our research findings and implications in subsequent chapters.

## RESULTS AND DISCUSSION

### Introduction

The study procedure employed a hybrid methodological approach that included quantitative and qualitative research techniques. Qualitative information was gathered by a well-designed survey that was sent to Sharjah participants via Google Forms. The qualitative findings were emphasized using statistical representations such as percentages, bar graphs, and pie charts. In order to strengthen this claim, the quantitative aspect of the study involved the meticulous collection and analysis of numerical data pertaining to bacterial contamination. An agar plate was regularly swabbed with a frequently used BeautyBlender as part of an experimental protocol employed for this portion of the investigation. This made it possible to see and closely examine the development of bacteria under an efficient microscope.

### Purpose of the Study

By providing fact-based knowledge on hygienic practices, this study seeks to empower individuals and promote a safer, healthier beauty routine that promotes self-care and overall well-being. There are important implications for both personal health and cosmetic operations from the study of how cleaning requirements for BeautyBlenders impact the development of germs in a subgroup of Sharjah participants. BeautyBlenders are becoming more and more popular as tools for applying cosmetics, therefore it is essential to use them with cautiousness and adhere to recommended hygiene practices.

### Data Presentation and Discussion

The findings are presented through various means including statistics, graphs, and visual images.

#### *Section A: Demographics characteristics of participants*

**Age of Participants:** The age distribution of the subjects is particularly important when evaluating the influence of BeautyBlenders on bacterial accumulations. The significant majority of 75% being between the 16-25 age bracket becomes more relevant owing to this group's frequent use of cosmetics, which may increase exposure to bacterial contamination through BeautyBlender use. In contrast, the 10-15 age bracket, which accounts for 15% of respondents, and the 25 and above age group, which accounts for 10% of participants, have lower engagement with makeup application, highlighting the importance of the dominant 16-25 age range in the context of the study's focus on bacterial accumulation associated with BeautyBlender use.

**Nationality:** After surveying participants primarily in Sharjah, the researchers discovered a varied range of nationalities that reflected the region's cosmopolitan landscape. Notably, the survey's nationality question was kept open-ended, and 40 out of 102 participants responded, accounting for approximately 39.22% of Sharjah's local participants. This implies a significant local presence in the study cohort, implying that the research is inclusive of the Sharjah community. The comments from many nations create a rich tapestry of perspectives, deepening and broadening the study's conclusions within the local context.

**Cleaning Habit:** After answering the first set of demographic questions on age and nationality, participants were asked to rate how often they cleaned their BeautyBlenders on a linear scale, from rarely (ranked one) to frequently (rated five). The comments gathered showed a wide range of beliefs and practices about BeautyBlender hygiene. Remarkably, a sizable 53.3% of participants provided a score of two, indicating a tendency for irregular cleaning procedures and even a possible neglect of hygienic maintenance. Moreover, a sophisticated attitude to maintenance was evident as 26.7% of participants chose a score of three, placing themselves halfway between those who routinely clean their BeautyBlenders and those who do not. Interestingly, the remaining replies for scores one, four, and five received equal percentages of 6.7%, indicating that a segment of the participants maintains consistent cleaning regimens for their BeautyBlenders. This data reveals a widespread habit of irregular BeautyBlender sanitation practices among surveyed individuals, underlining the significance of establishing basic hygiene habits and maintenance routines in the field of beauty equipment care.

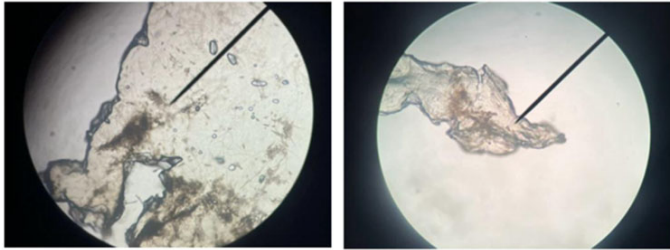
**Cleaning Solution:** In the subsequent question, participants were asked if they cleaned their BeautyBlenders with a particular solution or soap; the alternatives for answering were "yes," "no," and "sometimes." The answers revealed different cleaning approaches: forty percent of participants confirmed using a specific solution or soap, whilst thirty-three percent said they did not use any cleaning agent at all. This is a slight difference between the two groups. Remarkably, 26.7% of the population categorized themselves as "sometimes," suggesting a partial acceptance of specialized cleaning products. This data emphasizes the need for more research into the variables influencing people's decisions about beauty tool maintenance routines because it shows a clear variance in participants' preferences and habits regarding the usage of cleaning solutions for BeautyBlenders.

**Experienced Skin Issues:** One of the survey's primary questions asked about participants' experiences with breakouts or skin problems that they thought might be related to their BeautyBlenders. The scale was linear, with "not at all" (ranked one) to "often" (rated five). The results produced some interesting findings: a significant 47.6% of participants chose three, suggesting a moderate degree of suspected association between the use of cosmetic blenders and skin problems. Additionally, 26.7% of individuals selected four, indicating a stronger correlation between the use of BeautyBlenders and concerns with the skin. Remarkably, 20% of replies were rated as a five, indicating a minority that commonly connected their BeautyBlenders to skin problems. Remarkably, only 6.7% of respondents said they had no skin problems related to using BeautyBlenders, as indicated by a grade of one. This distribution highlights a high level of participant awareness about the possible effects of BeautyBlenders on skin health, indicating the need for additional research into the variables influencing these views and experiences with beauty tool use.

#### *Section B: Results of Swabbing and Bacterial Growth*

In the agar plate experiment conducted on the six-month-old beauty blender used daily in the Sharjah area, distinct types of microbial accumulation were observed. These included areas with yellow colonies, red colonies, and black mold-like growths (or structures similar to mold).

Under the microscope, we were able to further examine and identify the fungi present in these colonies and mold-like structures. This required the use of high-powered magnifiers to accurately distinguish and analyze the microorganisms. While specific identification was challenging without advanced laboratory testing, there is a possibility that the microorganisms observed could belong to common types such as *Staphylococcus aureus* (*S. aureus*) or *Escherichia coli* (*E. coli*).



**Figure 2. Left: Red colony. Right: Black (mold) colony**

The presence of diverse microbial growth, including different colors and structures, indicates a varied microbial community on the beauty blender. This diversity can be indicative of environmental contamination and inconsistent cleaning practices, emphasizing the need for thorough hygiene measures when using beauty blenders to mitigate potential health risks associated with microbial exposure.

### Interpretation and Discussion

Several potential factors contribute to bacteria contamination in BeautyBlenders, as observed in the study. One crucial factor is the frequency of cleaning. Participants who reported irregular cleaning practices their BeautyBlenders are more likely to have higher levels of microbial accumulation. This makes the importance of having cleaning routines clear to reduce the risk of bacterial growth. Another helping factor is the use of cleaning products. Participants who used specialized cleaning solutions or soaps are more likely to have lower levels of bacterial contamination compared to those who did not use any cleaning agents or only occasionally used them. This suggests that using appropriate cleaning products can help maintain better hygiene and reduce microbial buildup on BeautyBlenders. Storage conditions also play a big role in bacteria accumulation. BeautyBlenders that are stored in damp, unclean hubs are more likely to harbor bacteria and mold. Therefore, proper storage in dry, clean containers or areas can help minimize the risk of contamination. Cultural influences may also impact hygiene practices related to beauty tools like BeautyBlenders. Different cultural norms or beliefs about cleanliness and beauty routines can influence how individuals clean and maintain their BeautyBlenders. Understanding these cultural influences is essential for designing effective hygiene interventions and promoting safer beauty practices. Among the noteworthy patterns found in the data is the frequency of participants' irregular cleaning habits, with a significant portion not employing specialist cleaning solutions. This suggests that in order to properly emphasize the need of cleaning and hygienic procedures when using beauty equipment, education and awareness efforts are needed. Additionally, the data showed a moderate to strong perceived association between BeautyBlenders and skin problems among participants. This suggests a potential link between bacterial contamination on BeautyBlenders and skin health issues,

highlighting the importance of maintaining hygienic beauty tools to prevent adverse health effects. In conclusion, bacterial contamination in BeautyBlenders is influenced by various aspects, including cleaning frequency, product usage, storage conditions, and cultural influences. Reducing microbial growth and promoting safer beauty routines can be accomplished by addressing these variables through education, awareness, and the promotion of consistent hygiene practices.

### Conclusion

The study employed a hybrid methodology combining quantitative and qualitative research techniques to investigate the accumulation of bacteria in BeautyBlenders among participants in the Sharjah area. Qualitative data from a Google Forms survey highlighted varied cleaning habits, with a significant portion of participants reporting irregular cleaning practices. Notably, a sizable number of respondents did not use specialized cleaning solutions, indicating a need for further research into hygiene preferences and habits. Demographic characteristics, such as age and nationality, revealed a predominant age group (16-25) with higher engagement in makeup application, potentially increasing exposure to bacterial contamination. The study also found a moderate to strong perceived association between BeautyBlenders and skin problems among participants, emphasizing awareness of potential health impacts. The agar plate experiment showed diverse microbial growth on a six-month-old BeautyBlender, including yellow and red colonies, and mold-like structures. Microscopic examination revealed fungi presence, suggesting. Although exact microorganism identification is challenging, common bacterium types like *Staphylococcus aureus* and *Escherichia coli* are possibilities considered. Overall, the study underscores the importance of adopting consistent hygiene practices, using specialized cleaning solutions, and raising awareness about potential health risks associated with contaminated beauty tools. These findings have implications for promoting safer beauty routines and improving overall well-being among BeautyBlender users in the Sharjah area.

### Conclusion

This chapter displays the results and conclusion of this research. This section begins with an overview of the findings that answer the research question. It is followed by the implication of the study, the delimitations, and the recommendations for further research.

### Summary of Findings

The study employed a hybrid methodology combining quantitative and qualitative research techniques to investigate the accumulation of bacteria in BeautyBlenders among participants in the Sharjah area. The age distribution revealed a predominant engagement in makeup application among the 16-25 age group, potentially increasing their exposure to bacterial contamination. This demographic diversity was mirrored in the varied nationalities of the participants, highlighting the study's inclusivity within Sharjah's cosmopolitan landscape. Participants reported varied cleaning habits, with a significant portion admitting to irregular cleaning practices and a notable number not using specialized cleaning solutions regularly. This data underscores the need for further research into hygiene preferences and habits among beauty tool users. Moreover, there was a moderate to strong perceived association between



BeautyBlenders and skin problems, suggesting a potential link between bacterial contamination on BeautyBlenders and skin health issues. The agar plate experiment demonstrated diverse microbial growth on a six-month-old BeautyBlender, including yellow and red colonies, and mold-like structures. Microscopic examination revealed the presence of fungi, with possibilities including common bacterium types like *Staphylococcus aureus* and *Escherichia coli*. Although exact microorganism identification is challenging without advanced laboratory testing, these findings highlight the potential health risks associated with contaminated beauty tools. Factors influencing bacterial contamination include the frequency of cleaning, use of cleaning products, and storage conditions. Cultural influence may also affect hygiene practices when it comes to beauty tools, focusing on the need for awareness efforts. Overall, the study highlights the importance of adopting consistent hygiene implementations, using specialized cleaning solutions, and raising awareness about potential health risks associated with contaminated beauty tools. These findings have implications for promoting safer beauty routines and improving overall well-being among BeautyBlender users in the Sharjah area and worldwide.

### Implications of the Study

The implications of this study extend to the general public, particularly individuals using BeautyBlenders in their beauty routines. The findings emphasize the importance of consistent hygiene practices, the use of appropriate cleaning products, and awareness of potential health risks associated with contaminated beauty tools. Researchers interested in beauty tools, hygiene and microbial growth will find valuable insights in this study, building upon existing evidence and theories.

### Delimitations of the Study

It is important to note the limitations of this study, including its focus on selected participants in Sharjah and the age group studied. Generalizability to other age groups or regions may be limited. Additionally, the reliability of data could be influenced by participant representation of cleaning habits.

### Further Research

Further research can explore other brands of beauty sponges to compare their hygiene practices and bacterial accumulation. Additionally, investigating the frequency of cleaning and its effects on microbial growth would provide valuable insights into best practices for maintaining hygienic beauty tools. Another avenue for research could be examining if acne-prone skin has a different effect on contamination compared to clear skin, shedding light on the interplay between skin health and beauty tool hygiene. Moreover, exploring aspects such as angles, curves, colors, and shapes in beauty tools in relation to microbial growth could lead to a deeper understanding of factors influencing bacterial accumulation. Conducting similar studies in different cities or with broader age groups would also enhance the comprehensiveness of research in this area, allowing for more generalized conclusions about beauty tool hygiene practices and their impact on bacterial contamination.

### Conclusion

In conclusion, this study contributes significantly to understanding the relationship between Beauty Blender

hygiene practices and bacterial accumulation. The results and conclusions emphasize the importance of maintaining proper hygiene routines and using suitable cleaning products to prevent health risks associated with contaminated beauty tools and mainly, BeautyBlenders. This research is relevant to beauty enthusiasts, health practitioners, and researchers interested in beauty tool hygiene and microbial analysis.

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