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REVIEW ARTICLE

Body care activities and its consequences related to COVID-19 pandemic

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Abstract

Background: Symptoms of illnesses related to COVID-19 disease include also dermatological changes. Moreover, modification of cosmetic and hygenic habits are widely noted.

Aim: The aim of this paper is to review the literature focused on skin manifestations related to COVID-19 disease.

Materials and Methods: In order to obtain information contained in this review article electronic databases, such as Google Scholar and PubMed, was searched. Only peer-reviewed articles published in the past two years have been studied.

Results and Discussion: People have changed their cosmetics and hygenic habits, what has an impact on spreading COVID-19 disease, as well as on the beauty industry and human health.

Conclusion: More emphasis should be placed on increasing knowledge about skin lesions, which may appear in course of the disease or are associated with changes in hygenic and cosmetics habits.

KEYWORDS
cosmetics, COVID-19, hygiene, mask acne, pandemic

1 | INTRODUCTION

In December 2019, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) occured in Wuhan City, Hubei Province, China. The name of the disease (coronavirus disease 2019 - COVID-19) was officially given by The World Health Organization (WHO) on February 11, 2020.[1] As a pandemic, it was officially declared on March 11, 2020.[2] It infected nearly 200 countries.[3] In June 9, 2022, WHO noted 531 550 610 confirmed cases, including 6 302 982 deaths globally.[4]

SARS-CoV-2 belongs to Coronaviridae family in the Nidasdsdsdovirales order.[3] It is positive-sense and single-stranded 29.9 kb RNA beta-coronavirus.[5] It is a pleomorphic virus with crown-shaped peplomer spikes on the external envelope.[3]

Appearing of diagnostics may be noted 2–14 days after exposure,[6] incubation period of roughly 5.2 days.[3] Spreading of this disease is connected with close contact (approximately 2 meters) among people—coughing, sneezing, and talking make release respiratory droplets.[6] Virus can be found in faces and urine.[7] Other way is indirect contact—by airborne contagiom and contaminated objects.[5] The virus can remain on the surface of the objects like surgical gloves, disposable gowns, plastic, steel, aluminium, copper, wood, and aerosol in temperature from 20 to 25°C from 2 h to 3 days.[8]

Symptoms, which are caused by infection of this virus are as follows: fever, dry cough, shortness of breath or difficulty breathing, dyspnea. Sickness can result also with tiredness, fatigue, aches, myalgia, headache, chills, runny nose and nasal

congestion, sore throat, sputum production, vomiting, diarrhea, nursea, palpitations, pleuritic chest pain, chest tightness, and even haemoptysis. Manifestation of infection, which is perceived by most people as a reason to undergo a test, is the loss of smell or taste. Although the virus is highly contagious, some people do not show symptoms of infection.[1,3,6] In 20% of patients, disease can progress and cause pneumonia and respiratory failure.[6] RNAaemia, cytokine storm, and sepsis can be noted in some laboratory studies.[5] Statistic shows that 30% of patients has no symptoms of COVID-19 infection, 55%—mild/moderate symptoms, 10%—severe symptoms, and 5% critical symptoms. Higher risk of serious illness has people, with compromised immune system and who suffer from existing chronic medical conditions, for instance lung or heart disease. Older people and pregnant woman, particularly in third trimester, are also at greater risk.[3,9] Disease can lead in some cases even to death[6] because of multiple organ dysfunction. Case fatality rate is approx. 2%–3%.[3] However, the risk of death infected pregnant woman is increased to 70% than non-pregnant woman.[9]

World Health Organization (WHO) and Centers for Disease Control and Prevention (CDC) prepared indications to prevent spreading of the virus and get hold of infection:

- Keeping distance between people in communities, where SARS-CoV-2 virus is spreading—especially for persons who are especially at risk of developing a serious illness,
- Avoiding close contact (less than 2 meters) with people having symptoms or being sick,
- Often washing hands with soap and water for at least 20 s,
- If above action is impossible—using hand sanitizer, which contains at least 60% of alcohol,
- While coughing or sneezing—covering nose and mouth with elbow or a tissue, and then throw away it,
- On daily basis surfaces should be clearing and desinfecting.[10,11]

Moreover, one of the most repeated recomendation was not touching eyes, nose, and mouth with unwashed hands and not shaking hands while greeting others.[5]

2 | MATERIALS AND METHODS

The information contained in this article was obtained from scientific databases such as Google Scholar and PubMed. Approximately 200–300 peer-reviewed articles published in the past 2 years have been studied. Keywords, which was seached inter alia includes: COVID-19, pandemic, skin diseases, COVID-19 skin, SARS-CoV-2 skin, COVID-19 symptoms, COVID-19 skin symptoms, COVID-19 hygenic habits, COVID-19 cosmetics habits, pandemic hygenic habits, pandemic cosmetics habits, COVID-19 cosmetic industry. The acquired knowledge was analyzed and systematized.

2.1 | Hygenic and cosmetics habits during pandemic

To prevent transmission of viral diseases, like COVID-19, is important to use proper hand hygiene—likelihood of spreading it decrease to 6%–44%.[12] Cosmetics, which are to use to this activity are as follows: liquid or bar soaps, synthetic detergents, antiseptic handwashes, and alcohol-based hand sanitizers. Impact on handwashing behavior habit have interpersonal influence, washing hands when feeling dirty, the desire to smell good, the presence and distance of handwashing facilities.[13] Proper washing hands is connected with a proper procedure at the correct time. Recomendations are prepared by WHO and UNICEF.[14] In some countries, awareness campaigns about the importance of this activity are carried out, for example in Indonesia is implemeted The School Health Unit program, which promotes handwashing with soap, but it is considered as insufficient. However, data collected and analyzed by Basic Health Research claims, that hand washing is performing in improper way by 50.2% of users. Moreover, in some coutries, problems with access with clean water can impact on hygenic habits—f.e. in Indonesia in 2017 number of households with access to decent drinking water was 72.04%.[7] Data show,that during pandemic frequency of mentioned activity significantly increased—before it respondents declared washing hands 6–15 times a day (58.4%) while before the pandemic - 3–10 times a day (68.1%).[14]

Transmission of illness may be probabily reduced by meticulous oral hygiene, esspecially in hospitalized COVID-19 patients, quarantine and isolation centers. First of argument of implementing this habit is that SARS-CoV-2 virus colonizes in the oral cavity, because the salivary glands, the epithelial lining of salivary ducts, and oral mucosa, by reason of a higher level of angiotensin-converting enzyme-2 expression in this tissues, are early target cells for coronavirus. Second, oral cavity is the most frequent portal for entrance and outlet for spreading of viruses, because of droplets and aerosol released during speaking, coughing. Increased conduction of the colonization of potential oral and respiratory pathogens are linked with dysbiosis condition of this part of body and harbors numerous pathogens, including viruses. Nasopharynx's and lung's discharges are a component of saliva. In result, the probability of microorganisms-spillover from the respiratory system to the oral cavity cannot be excluded. It is recommended, especially durng COVID-19 pandemic, to remember of tooth brushing for “Two Times For Two Minutes” in a day.[15]

During pandemic, WHO recomended using of mask for everyone. It was an protective equipment, which helped to reduce the risk of exposure and transmission of COVID-19.[7] Studies of others has shown, that N95 masks and surgical masks are able to block 91% and 68% of pathogens.[12] When underlying transmission rate is relatively low or decreasing even very weak masks (20% effective) could reduce mortality by 24%–65% in case of 80% adoption.[16]

Pandemic restrictions had an influence on people's habits connected with usage of cosmetics. One of products, which were less frequently applied is lipstick—it was caused by the obligation of

wearing masks in public places. However, the sales of the make-up cosmetics were increased. Demand for skin care products was higher.[17] Respondents in reseach conducted in Poland at the beggining of restrictions claim that there was a statistically significant increase in the use of hand creams and a reduced use of make-up face and eye cosmetics, lipsticks, nail conditioners and varnishes, hair dyes, and perfumes.[18] New cosmetics habits were implemeted by woman—before pandemic 28% of woman were providing themselves full face care (make-up removal, peel/exfoliation, serum, mask, cream) less frequent than once a week and during it—46% claimed, that was doing it two to three times a week.[19] In another study, it was shown, that using of sunscreen cosmetics significally decreased. Frequency of undergoing hair removal got lower.[20] Moreover, increased interest was noted in searching on the Internet ways of taking care on skin at home,[17] however the most popular way of obtaining of information about skincare was social networks and websites (for example, YouTube, Facebook, Instagram).[19] Povitive effect of following the entire home skin care procedure, during closure connected with restrictions of going out of homes, was noted.[21] What is interesting, the number of taken showers or bath and washing of hair slightly changed. In Poland before pandemic, 67.9% of women were customers of beauty saloons, and during pandemic lockdown this value droped down to zero.[18] In comparison with study conducted in Nepal analysis show that number of clients for beauty treatments decreased from 79.3% to 29%.[20]

2.2 | Skin problems – unexpected part of pandemic

COVID-19 disease is characterized by skin symptoms, too. One of the most frequently noted are vesicular lesions. During illness manifestations may appear: vaso-occlusive lesions (fixed livedo racemosa, retiform purpura, acral ischemia), vesicular lesions, erythematous rash containing macules and papules, urticarial lesions, and pseudo-chilblains.[22]

The symbol of current pandemic-mask were commonly worn not only by medical employees, but also by most of people. Prolonged time of wearing it can result in appearing erythema, eruption, pustules, papules, pigmentation, and contact dermatitis along the areas of contact.[23] One of the widely known symptoms, which can be caused by wearing masks is mask acne. This condition can appear in patients with history of acne vulgaris as well as people, who did not suffer this. Acne is a dermatose derived by blockage and/or inflammation of pilosebaceous units. The reason of changes on skin may be local pressure of close-fitting mask on the skin.[24] Moreover, sebum secretion in areas under mask is significally higher.[23] It can provide to the obstruction of pilosebaceous duct in consequensce in either the emergence or exacerbation of acne. Manifestation are pimples, whiteheads, blackheads. Even 53.4% of people, who regulary wear masks, can complain about acne breakouts. Significantly more prone to this disease are those, who are using N-95 masks. It was not found the connection between wearing surgical and cloth mask and its development.[24] The risk of side effects of wearing masks for at least 4 h each day and reusing the mask is higher compared with changing them everyday.[25]

Next of problems, which can appear on the skin is contact dermatitis of hands. All the cleaning cosmetics, which are used more frequently during pandemic, may alter skin barrier integrity and function and lead to increased risk of maturity.[23] Clinical symptoms of irritant contact dermatitis (ICD) include: xerosis, scaling, fissuring, and bleeding.[26] It appears as a result of combination of physical and chemical factors (e.g., hot water and detergents). Their action may cause keratinocyte release of proinflammatory cytokines that instigate skin barrier disruption, cellular changes, and additional cytokine release. Cosmetics and its ingredients, that are believed to affect the skin are: detergents, antimicrobial soaps containing chlorhexidine, chloroxylenol and triclosan, alcohol-based products, iodophors, and other additives in hand cleansing products. However, in case of ICD, to minimize it symptoms, it is recommended to replace harsher soaps and detergents with alcohol-based hand sanitizers (ABHSs), which contain emollients or moisturizers with low allergenicity. Moreover, it has lesser lipid-dissolving effects.[27] On the contrary, ABHSs alter the skin flora, which is linked with higher colonization by staphylococci and Gram-negative bacilli.[26] ABHSs are conferred lower rates of ICD than traditional hand washing methods (soap and water).[27] Its most common type of contact dermatitis—number of cases approximately 80%.[28] Allergic contact dermatitis (ACD) could be also connected with higher frequency of washing hands.[27] Its a IV type of allergy, T-cell-mediated.[28] First step in development of contact allergy is a sensitization to a specific allergen. In second contact, exposure to the allergen elicitation of the inflammatory response[27]—inflammatory cascades are initiated by the sensitized T cells. In most cases, symptoms beginig 48 h or days after contact with the allergens.[28] Some of the ingredients, which can be found in formulation of hand hygiene cosmetics and cause ACD, are surfactants, antimicrobial ingredients, preservatives, fragrance, and other.[27]

Another manifestation, which is common among patients is hair loss. This postinfectious symptom is a result of infestion on hair follicle. It can be dystrophic anagen effluvium and early onset or with telogen effluvium and late onset, depending on the type and intensity of the insult.[29] Influence on patiences' hair loss after undergo a COVID-19 disease could have immense psychosocial and physiologic stress. After infection of SARS-CoV-2, body starts to create a proinflammatory state, which result in tissue damage and other sequelae. Anticoagulation mechanisms are impairing and proinflammatory cytokines are releasing. It may provoke telogen effluvium via the systemic inflammatory response and/or microthrombi in the hair follicles, which may occlude hair follicle blood supply.[30] Hair loss 3 months after the infection and is usually self-limiting. It can last approximately 6 months.[31]

Pandemic of COVID-19 has also an influence on existing skin diseases. One of the diseases among which the deterioration of

patients' condition has been noticed during the pandemic is atopic dermatitis.[32] It is a chronic disease, which affects 2%–3% of adults and 10%–20% of children.[33] It belongs to the group of inflammatory skin diseases.[32] Futhermore, the dysfunction of the epidermal barieer is one of the pathophysiology mechanisms.[33] Triggering and/or flaring of the symptoms of atopic dermatitis can be caused by environmental factors and genetics. In the time of COVID-19 pandemic, the worldwide situation has an impact on appearing of relevant psychological adverse events such as depression or emotional fatigue.[34] This could impact on neuroendocrine modulation of skin inflammation and increase of itch.[35] Moreover, skin damage and worsen of the sickness can be related to changing of hygenic habits—increasing frequency of handwashing and using hand sanitizers. Immunosuppressive effect of sunlight is limited because of less exposure.[34] Therefore, it is possible to expect intensification of skin diseases symptoms.

3 | RESULTS AND DISCUSSION

During pandemic, people's lives changed. Much effort has been put into researching about the virus SARS-CoV-2 and stopping the pandemic from progressing. On the impact on spreading of it, have common people and their hygenic habits. WHO and CDC prepared recomendations, concerning, proper ways of washing hands. Changes in frequency of clearing hands were significant. It is wondering if they will persist. This hygenic habit could prevent spreading not only COVID-19 disease, but also other dirty hands diseases. In the author's opinion, many years of research should be carried out on how the increased use of soaps and disinfectants will affect the skin microbiome. In addition, increase the emphasis on carrying out to psychological studies on the increased number of applications of individual ingredients of preparations and their impact on individual aspects of human health, for example, the emergence and increased frequency of allergies. The knowledge gained during the obligation to wear masks can also be used during the infection season. The author suggests that it would be worth doing more research on how changing this habit affects the human psyche and interpersonal interactions. Worldwide pandemic situation affected cosmetics habits, too. Less using of make-up cosmetics and more attention to skincare would designate new paths of development of cosmetics industry. It is puzzling whether changes in the use of make-up affect the sense of self-confidence and the sense of attractiveness of a person. More emphasis should be placed on increasing knowledge of doctors and awareness of people about skin lesions, which may appear during the course of the disease or as changes which, although not caused directly by virus infection, are associated with changes in daily life. This would contribute to faster diagnosis and the use of effective treatment, which would affect the quality of life of patients.

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CONFLICT OF INTEREST

None.

DATA AVAILABILITY STATEMENT

Data sharing not applicable to this article as no datasets were generated or analysed during the current study.

ETHICS STATEMENT

The conducted literature review did not require the agreement of the bioethics committee.

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