



## Original Article



## Survey on Eczema; Its Perceptions and Characterization

Nageen Hussain<sup>1\*</sup>, Ahmed Naveed Bhatti<sup>2</sup>, Bushra Nisar Khan<sup>3</sup>, Ayesha Siddiqi<sup>1</sup>, Shaheer Azhar<sup>4</sup> and Tatheer Zahra<sup>5</sup><sup>1</sup>Institute of Microbiology and Molecular Genetics, University of Punjab, Lahore, Pakistan<sup>2</sup>Mustafa Kamal Institute of Nursing and Medical Sciences, Vehari, Pakistan<sup>3</sup>Conservation Biology Lab, Institute of Zoology, University of Punjab, Lahore, Pakistan<sup>4</sup>Sheikh Zayed Hospital, Lahore, Pakistan<sup>5</sup>Walsall Manor Hospital, Walsall, United Kingdom

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Institute of Microbiology and Molecular Genetics,  
University of Punjab, Lahore, Pakistan  
nageen.mm@gmail.comReceived Date: 8<sup>th</sup> July, 2024Acceptance Date: 22<sup>nd</sup> August, 2024Published Date: 31<sup>st</sup> August, 2024

## ABSTRACT

Eczema (atopic dermatitis) is a common inflammatory skin disease. It causes physical discomfort and also cause stress due to constant itching, which in the end leads to painful wounds. It can be triggered by environmental, genetic, stress, and anxiety factors. The symptoms of eczema are similar to other skin disorders. In some cases, incorrect diagnosis results in the administration of medication for other skin disorders. **Objective:** To understand the patients' knowledge about the disease and to create a sense of awareness for them. **Methods:** We prepared a questionnaire to get sense of people's understanding about eczema and surveyed students at Punjab University as well as we collected data with help of online google forms. There were 103 responses from people of both genders, age ranges from 20 to 35 years, and different educational backgrounds. **Results:** Most of the people think they understand what eczema is, but they have confused it with other skin conditions. According to the responses, sudden change in surroundings is the most triggering factor in causing eczema. Only 1% of people think it could be a contact disorder and can be triggered by pets and refined carbs. The most challenging weather for eczema is winter and the time is night. **Conclusions:** it was concluded that eczema is a really disturbing disease. This disorder is incurable yet. However, with proper care, timely treatment, and by taking preventive measures, can prevent to flare-up.

## INTRODUCTION

Eczema is a condition of skin inflammation that causes irritation. It is a chronic, relapsing disease characterized by pruritus, disrupted epidermal barrier, and immunoglobulin E-mediated sensitization to food, environmental allergens, and many stimulants [1]. The severity of skin itchiness and dryness is related to age. The condition commonly develops in early childhood and disappears before adolescence. However, in some cases, the condition continues into adulthood, while in others, it starts appearing later in life. So, understanding and diagnosis of this disorder is difficult. Children are more likely to develop any type of eczema, they are at more risk to develop the symptoms [2]. Eczema can be caused by both endogenous and exogenous factors. Although genes play a major role,

immunoglobulin E antibodies are created in response to allergens in the environment, such as dust and food [3]. Skin is the first line of defense against foreign invading microbes. During eczema skin gets thinner and leads to the loss of barrier which spurs this condition and allows the passage of other opportunistic microbes which enhances the severity of this situation and causes other infections [4]. Many factors that can trigger and flare up eczema like seeded vegetables contain salicylates and amines which can trigger eczema. Observations have shown that vitamin D deficiency is also one of the major causes of eczema [5]. Cosmetics can also play their role. Polyester (synthetic fiber) is one of the factors of eczema. Certain food allergies may also contribute to eczema or can worsen already



present eczema. One of them is coffee, there are some issues associated with it, like digestive and inflammatory skin conditions [6]. Airborne allergens (pollen, dust, etc.) can also contribute to eczema. Eczema occurs when these substances in the air overreact with the skin or by inhaling leading to effects on the immune system. Soaps, detergents, and bubble baths are some irritants to eczema patients [7]. Another factor is obesity, about 60-70% of obesity people face skin changes. Metal allergy may result in allergic contact dermatitis and systemic allergic dermatitis. Certain environmental factors cause eczema in the winter season, it boosts up due to dry weather and low moisture content [8]. Monthly hormonal changes in female, rise in estrogen levels can contribute to an increase in eczema, and sometimes some foods such as nuts and other dairy products can trigger the immune system and ultimately lead toward eczema [2]. Eczema is untreatable. Although there are some treatments available, none of them can completely eliminate the symptoms [6]. Emollient, topical, and systemic antimicrobial agents, as well as a corticosteroid or immune-modulating agents are used to treat this condition [9]. Corticosteroids (CS) are the common treatment for it in either topical or systemic form. When the condition of scars worsen, topical corticosteroids are applied as creams and ointments to reduce inflammation and redness [8]. For exacerbation management and proactive therapy, anti-inflammatory treatment based on topical glucocorticosteroids and topical calcineurin inhibitors (TCI) are used. The mainstay of therapy remains topical corticosteroids, but TCI tacrolimus and pimecrolimus are preferred to apply on most rashy areas of skin. For severe refractory cases, systemic immune-suppressive therapy is an option [10]. Microbial colonization and superinfection can cause disease exacerbation, requiring additional antimicrobial treatment. UV irradiation, preferably with UVA1 wavelength or UVB 311nm, is used as adjuvant therapy. Dietary recommendations should be specific and given only to individuals who have been diagnosed with food allergies. Aeroallergen-specific immunotherapy may be beneficial in some cases [11, 12]. The study aimed to determine the characteristics of eczema disease in university students and general population. The awareness regarding factors involved to cause the disease along with the awareness regarding its treatment and prevention is also explored among participants.

## METHODS

In this survey, we employed techniques that included the design of a questionnaire, a sample size selection, the administration of the questionnaire, the data collection, and finally statistical tool Analysis of the data. The sample size was calculated by using sample calculator. Its confidence level was set 95%, margin of error was 5% and population proportion was used as 50%. The calculated sample size was 103. We created a questionnaire after researching and reading 20 different articles and theories

for the awareness of eczema among people [8, , ]. The questionnaire which was prepared consisted of 37 questions to cover all aspects of the construct being measured. These different factors of eczema included awareness, age, factors, symptoms, medication, immunology, and genetic and environmental factors. In this questionnaire, we made questions with "Yes, No or May be" options to check the awareness and prevalence of eczema. Data were collected by gathering the sample on all the factors of eczema from students of different institutes and departments of the University of Punjab and from different persons by online google forms. They students were included to check the awareness level of students regarding this disease. No education criteria were set. We get the printouts of our questionnaire to be filled from students as well as responses were collected by online google based Performa. After collecting responses, the data were compiled by using GraphPad prism ver. 9.4.0.673 to analyze the data of this descriptive study.

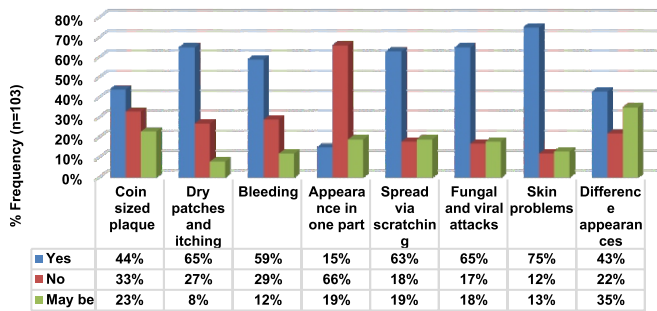
## RESULTS

Total 103 responses were recorded. From these 103 respondents, 80 were students and 23 responses were collected from public. The age group of students was 20-30 years and public respondents' age ranges from 20-35 years. According to the bar graph information on the manifestation of eczema, the responses of people was attained. From all the 103 respondents, 65 were female while 38 were male (Table 1).

**Table 1:** Basic Information of the Respondents

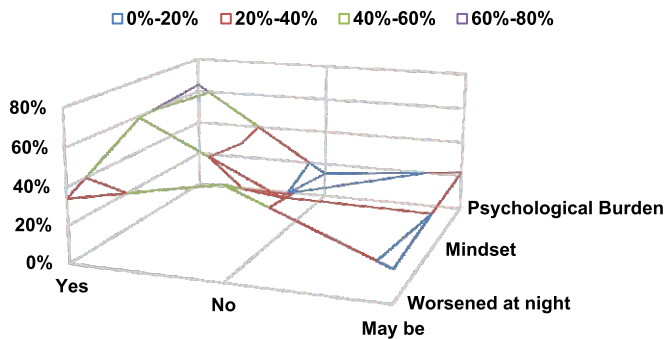
Number of Respondents		Age		Gender	
Total Respondents	103	Student respondents	20-30 years	Male	38
Student Respondents	80	Public respondents	20-35 years	Female	65
Public Respondents	23				

About 44% of people in this study are in favor that eczema can take the form of a small coin-size plaque. Almost 65% of people thought that wrinkles, dry patches, and severe itching are symptoms of eczema. Skin cracking leads to bleeding is considered by 59%. About 15% of the people ponder that eczema appears in only one part of the body and 63% agreed that eczema can spread in different parts of the body via scratching. Figure 1. Mostly, people thought that eczema could lead to viral and fungal infections, 65% are in favor. Eczema can lead to many skin problems like dehydrated skin or loss of skin barrier to pathogens considered by 73% of people. Mainly 43% of the people thought that eczema on the face and neck sometimes looks different from elsewhere on the body (Figure 1).



**Figure 1:** Manifestation of Different Factors and Key Characteristics of Eczema Disease

According to survey, 49% of the people think that symptoms of eczema cannot worsen at night. Nearly 59% of the responders thought eczema can interfere with daily activities like sleep and work etc. Eczema can cause psychological burden in patients is thought by 64% (Figure 2).



**Figure 2:** Distribution of Different Uncomfortable Feelings Caused by Eczema

According to this survey results, we found that 33% of people think that weak immune system (weak protective barrier) leads toward eczema. Skin barrier loss occurs in eczema patients but it is not the same for all there is variation in it. Some people experience skin barrier loss but others do not. Nearly, 67% of people in our sample have (experienced or noticed) information about it. Genetic factors participate in eczema but people are unaware of this idea. Only 22% people of in our sample have information that eczema has a relationship to genetics (Table 2).

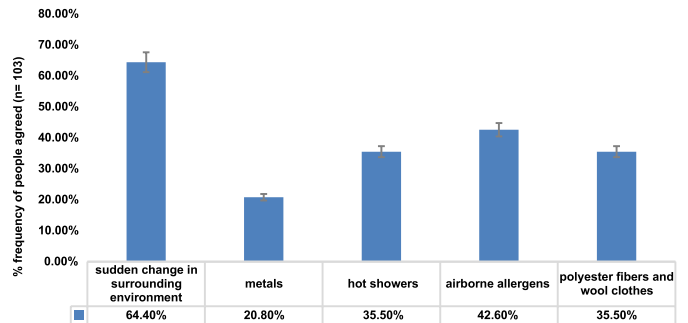
**Table 2:** General characteristics of Participant's Awareness about Immune and Genetic Factors related to Eczema

Column 1	Awareness (%)	Unawareness (%)	Confused (%)	Total	Chi-square	P-value
Genetic Factor	22 (40.67)	57 (33.00)	20 (25.33)	98	$\frac{\sum(O-E)^2}{E} = 63.5388$	0.00001
Immune Factor	33 (40.67)	31 (32.67)	34 (25.08)	99		
Loss of Skin barrier	67 (40.6)	11 (33.33)	22 (25.59)	100		

Significance association:  $p < 0.05$ .

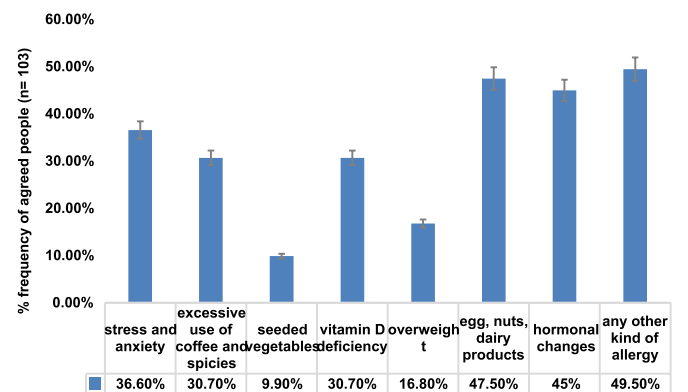
According to our survey, we found that 66% people think that sudden change in surrounding environment can cause eczema. Metals also lead to eczema. Only 21% people have information about. According to our survey report, 36% people agree with the statement that hot shower has role in

causing eczema. About 64% population think that winter, eczema has relationship with each other. Although polyester fibers and wool materials are harmful to eczema patients, according to our survey we found that, there is not much awareness about this factor, only 35.6% of people agree on this point. Regarding airborne allergens, most people think that these have an effect on eczema patients by flaring up the symptoms or they can contribute to eczema. It has been observed in our survey that 42.6% of people consider airborne allergens to be the cause of eczema (Figure 3).



**Figure 3:** Effects of Environmental Factors on Eczema Patients

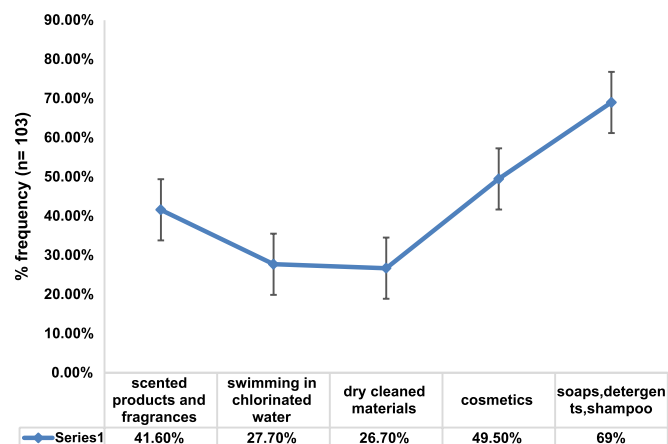
Stress and anxiety play a major role in flaring up eczema. Only 37% people from our sample agree with it. A big percentage of women think that hormonal changes can worsen the eczema (45%). Very less number of people think that there is no relationship between old allergies and eczema. Very less number of people think that there is no relationship between old allergies and eczema. According to survey majority of people think that is almost 48% that eczema and food allergies are related with each other and that is true to some extent. According to our survey, about 30.7% of people think that coffee and spices can cause eczema. As is it not completely sure the relationship between eczema and obesity but many researchers claimed that there is some association between them. However, according to our survey, many people do not think obesity is a factor that can contribute to eczema (Figure 4).



**Figure 4:** Role of Different Health Conditions and Food Allergies in Patients of Eczema

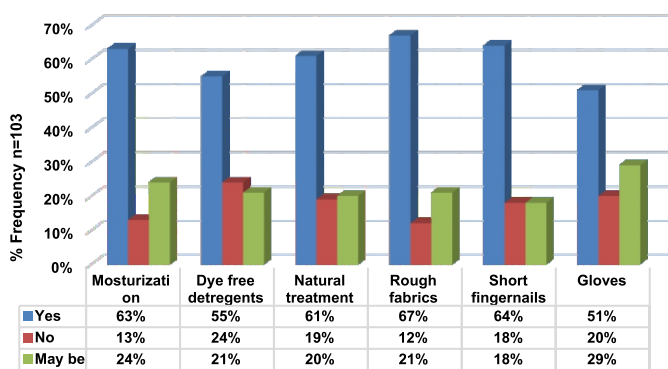
The cosmetics, skin care products and different chemicals play a very important role in Eczema disease. In our study

about 42% respondents said that scents products and fragrances can enhance the severity of disease. The involvement of swimming in chlorinated water, use of dry-cleaned material, use of cosmetics and soaps detergents and shampoos were found involved 27.7%, 26.7%, 49.50% and 69% respectively according to respondents(Figure 5).



**Figure 5:** Role of Cosmetics, Skin Care Products and Different Things to Enhance the Severity of Eczema.

In this study, 31.3% people believe that permanent cure of eczema exists. About 54.6 % people believe that the severity of eczema reduces by using dye free detergents. In current work, 50.5% people think that wearing gloves while washing or cleaning can reduce the flare up of eczema, while 60.6 % of people think that natural treatment cure eczema and 66.7% of people think that avoid rough fabric cure eczema. About 64.3% of people think that short fingernails help to reduce the itching. In the same way, 50.5% of people think that wearing gloves help to reduce the itching of eczema(Figure 6).



**Figure 6:** Treatment Options and Preventive Measures for Eczema Patients

## DISCUSSION

Through conducted survey the majority of the general population is unaware of eczema, despite the fact that it exists in our society. Most people regard it as a common skin allergy. People are aware of many specific eczema symptoms, but some aspects remain unknown to them. Rashes and itchy skin emerge in the acute stage, whereas

wrinkles and dry patches appear in the subacute stage, and infectious bleeding wounds usually spread throughout the body in the chronic stage. Clinically, the disease is worsened in a circadian rhythm pattern at night [12, 15]. Those patterns play a variety of skin functions, including skin cell turnover, water retention, sebum (skin oil) production, immune function, and even DNA repair. According to a survey 26.6% people including male and female reported suffering from sleeplessness every night or very often due to severe itching [2, 16]. Majority of our respondents 22% were aware about the role of genetic factors involving in eczema. Mutation in flaggering encoding gene leads toward this atopic dermatitis condition. Nearly 20% of participants have knowledge about genetics and eczema but they were confused about its relationship. Eczema cause barrier loss, Skin loss facilitate the entry of microbes in body and cause to develop infection. As immunity decreases during eczema [17], 33% of our respondents have knowledge that immunity lowers during eczema. While 11% of our participants were unaware about it, 34% of participants were confused that either immunity have relation with eczema or not [18, 19]. Many studies demonstrate that seeded vegetables such as brinjal and tomatoes aggravate eczema, yet the general public is ignorant of this. Vitamin D insufficiency, dry cleaned items(clothes and blankets), and swimming in chlorinated water all contribute to eczema in affected individuals, but only 28% are aware about it [14, 13]. Changes in the surrounding environment, such as climate change and urbanization, increase air pollution can flare up eczema. Winter is the most difficult season for eczema patients, as evidenced by the survey and other scientific studies. According to studies, stress and anxiety produce an increase in cortisol levels, which leads to inflammation, which worsens the condition more [20, 21]. According to research, cosmetics containing fragrance worsen eczema regardless of how mild it is, yet only half of the population is aware of this factor. Polyester fibers and wool fibers are also seen to be the major cause of flare-ups [2, 22]. Use of coffee and spices should be in controlled manner to reduce eczema flare-ups. Eczema is more likely in people who have a skin allergy of any kind. The findings of the studies we looked into and the survey we did were consistent. Perfumes and fragrance made up of low molecular materials cause redness on skin with burning and itchy sensation result in flaring scars of eczema[23, 9]. Researches shows that exposure to heavy metals can also trigger eczema. Cotton, preferably 100% cotton, is the most commonly recommended fabric for eczema sufferers. Cotton is supple, cool, good at soaking perspiration, easy to wash, and allows the skin to "breathe."

Short-term use of moisturizers with a high lipid content, the use of cotton liners if occlusive gloves are worn, and the use of softened fabrics can help to prevent the development of eczema [24]. Thus, it is necessary to bring awareness among people [25].

## CONCLUSIONS

We have met a variety of people from different walks of life and we have concluded that most people think they know about eczema, but in fact they confuse it with other skin diseases. Despite its complexity, atopic eczema is a challenging disorder for patients and doctors alike. The burden of eczema is heavy, but unfortunately, the condition is often misinterpreted. Eczema affects the health of entire body, not just the skin. It affects the individuals mentally and physically. It affects children and adults, as well as their caregivers. Several factors interact to cause it, including genetics, immunity, and environment. For better disease prevention, it is important to understand how environmental factors can influence, change, or modify disease risk factors. People with eczema should avoid the things that flare up this condition. Dye free detergents should be used to reduce the severity of eczema. Tropical moisturizer is crucial, and wearing fabric gloves at the same time may only increase its effectiveness in treating hand eczema.

## Authors Contribution

Conceptualization: NH, BNK, AS

Methodology: NH, BNK, SA

Formal analysis: SA, NH

Writing, review and editing: ANB, SA, TZ

All authors have read and agreed to the published version of the manuscript

## Conflicts of Interest

The authors declare no conflict of interest.

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