

ECZEMA {Atopic Dermatitis}

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Abstract

Many of the persons around the world suffer from eczema which is also called atopic dermatitis. It is a kind of skin disorder that makes the skin dry, itchy, and sometimes even painful. There is no specific age group who got affected by this particular disease, no matter what age you are. But particularly it is seen that the children were mostly affected by eczema, as there is no cure for eczema one can only minimize the effects with proper treatment over time. During the period of the pandemic, it is very difficult to go out and meet dermatologists for regular evaluation of the condition and that is why the cases of eczema also got worsened during this time period. Eczema can be caused by various types of factors like genetics, allergens present in nature, or food, there is no particular reason or factor which causes the disease. In this review, we discuss the new treatment approaches, and factors responsible for triggering eczema and get to know eczema in more detail.

Keywords: Roseomonas mucosa, Covid-19, Asthma, Rhinitis, Dermatitis

INTRODUCTION

Eczema is a kind of disease related to the skin and it is also recognized by the name atopic dermatitis. In this disorder, one can feel itchiness on the infected area, and the skin gets dried on the infected region, if not taken care of the condition properly it may become worsened. This disease is also caused in the olden times too, in ancient times eczema was identified by the name “ekzein” which means “to boil out” because it looks like the skin got burnt so they named it like this. In the Middle Ages, people thought that it is a kind of leprosy and also see it as a contagious disease, then in the nineteenth-century clinicians will distinguish it as a skin disorder which is not contagious and not related to leprosy anyhow. Then in the twentieth century, the focus is on finding the treatment and causes for eczema (Vickers, 1980) [80].

Eczema can be caused due to a variety of factors such as allergens, irritants, hereditary factors, and many more. It can be recognized by the red itchy patches, and dry patches on the skin, and sometimes inflammation was also there (Cartledge, 2023a) [17]. One can be affected by this disease at any stage of life but it is mostly seen in children and that is why researchers use the phrase ‘Childhood Eczema’ (“How to Manage Childhood Eczema,” 2002) [35]. One has a family history of this disease or we can say that they have the hereditary are more supposed to get affected by the disease as this was present in their genetics (Beck et al., 2009) [11]. Individuals who suffered from other allergy-related disorders such as hay fever or asthma also have a high chance to get infected as compared to normal ones (Taïeb et al., 2006) [73].

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As we know that there is no particular cause for this disease, so we have a number of factors responsible for eczema (Shi et al., 2023) [69]. Some soaps and detergents, which was not so gentle and have a very harsh effect on the skin can be a reason for eczema similarly some pollens, pets dander, stress, and climate conditions can be a factor for causing eczema (Barnetson & Rogers,

2002b) [8]. Also, the symptoms and the cause of eczema will be different for every person which makes it difficult to get diagnosed and get the right treatment (Carucci et al., 1998) [19]. There is no cure for eczema only treatments are available which helps to reduce the infection some of the remedies are applying moisturizers on the skin daily after taking bath, using stress suppressant drugs, using humidifiers that don't let the skin dry, avoiding triggers, and follows a good skincare routine will allow the sufferer to lead a healthy life (Barnetson & Rogers, 2002a) [7].

As millions of people globally are affected by this disease and because no cure is available the number of victims will get increased day by day so the researchers will try to get a cure and the work is still on (Sporik & Kemp, n.d.) [70]. Eczema can be a very hard, unpleasant condition for the one who is suffering from this disease but one can get rid of this disease by following a skincare routine and by maintaining personal hygiene (Howlett, 1999) [36]. This article focuses on the habits, treatment, diet, and all general aspects that help to achieve a stress-free life for the sufferer.

Symptoms of Eczema

Eczema can be characterized by a variety of signs and symptoms that vary in severity and presentation. Figure 1 shows a pictorial representation of eczema symptoms and Table 1 gives Detailed view of Eczema symptoms.

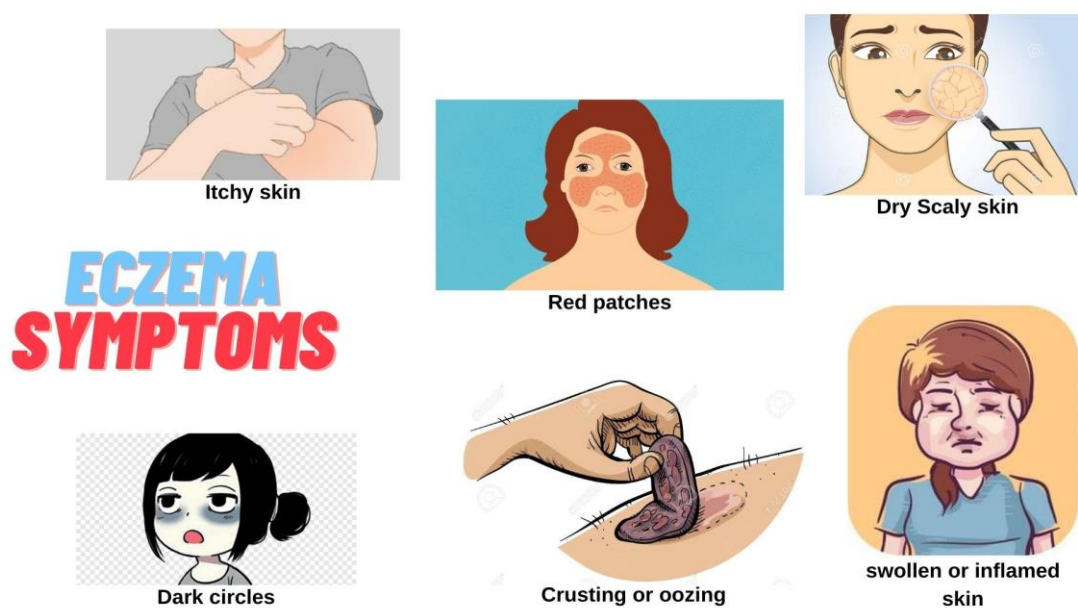


Figure 1. A pictorial representation of eczema symptoms.

If someone faces any of the above-mentioned signs then a person needs to immediately contact the dermatologist and start prescriptions.

Can Eczema Patients Develop Respiratory Conditions?

Eczema is purely a skin disorder as it dried-up the skin and makes the skin itchy (Kumagai et al., 2023) [43], and we can simply see that it does not connect with respiratory problems but the researchers will find some pieces of evidence and according to this, eczema patients will tend to have more sensitive to develops the respiratory disease like asthma or allergic rhinitis (Urrutia-Pereira et al., 2023) [77].

According to the studies it is found that in more than 70% of the cases, eczema patients will already have asthma or allergic rhinitis (Nataraj & Komaravelli, n.d.) [58]. Allergic rhinitis is also recognized as hay fever, one major reason to have asthma or hay fever is common in eczema patients is if

someone is suffering from eczema then their resistance power towards allergens was very less, and because of low resistance power asthma or allergic rhinitis like disease will catch that person easily (Foster et al., 2023) [25].

It is true that the eczema patient may have respiratory problems but it is also that true that this will not be applicable to every eczema patient (Forster et al., 2023) [24]. And for a correct diagnosis and course of treatment, it's crucial to see a healthcare professional, so they got the exact idea whether they suffer from eczema or have a respiratory infection as well (Wang et al., 2023) [81].

Table 1. Detailed view of Eczema symptoms.

S.N.	Symptoms	Details	Reference
1	Itching	Eczema patients will generally complain of an extreme itching problem that can be considered as a very annoying and problematic symptom.	(G'ulomova Feruza, 2023) [31]
2	Rashes (red or brown)	On eczema, one can get rashes on the infected area of the skin which will be red or brown in color.	(Barta et al., 2023) [9].
3	Skin gets dried	In this disease, the skin which gets infected will get dried and if not taken care of in time it will get more severe and even bleeding is reported in the worst scenarios.	(Aktas & Esin, 2023) [2]
4	Swollen skin	The patients may also develop swelling and inflammation in the infected region.	(Shen et al., 2023) [68]
5	Crust skin	In many cases, crusty skin will also be reported.	(Tan et al., 2023) [75]
6	Skin sensitivity	The skin of the sufferers was too sensitive and may react to irritants and produce allergies like itching, swelling in the skin, etc.	(Vindenes et al., 2023) [80]
7	Dark circles	Dark circles will also be identified as a symptom in eczema patients.	(Kiguchi et al., 2023) [41]

TYPES AND VARIANTS OF ECZEMA

The followings are some of the most common eczema types which are almost similar to each other but have slight differences which we see below in a tabular form (Table 2).

Table 2. Types of Eczema.

S.N.	Types	Details	Reference
1	Atopic dermatitis	Occur at any age, is common in children, and causes dryness, inflammation, and itchy skin.	(<i>Childhood Atopic Eczema The BMJ</i> , n.d.) [21]
2	Contact dermatitis	Developed due to environmental triggers, also called allergic contact dermatitis.	(<i>Allergic Contact Dermatitis: Chemical and Metabolic Mechanisms - Camilla Smith - Google Books</i> , n.d.) [4]
3	Nummular dermatitis	Develops little, circled shape lesions all over the body, also called nummular eczema.	(Kost et al., 2023) [42]
4	Seborrheic dermatitis	Type of inflammatory eczema, and affects the scalp of the patient.	(Filatov et al., 2023) [23]
5	Dyshidrotic eczema	Drying out the skin and giving a burning sensation which is most unpleasant, also produces rashes and blisters.	(Van De Mosselaer et al., 2023) [78]
6	Stasis dermatitis	Produced in the lower region of the legs due to abnormal blood circulation in the legs.	(Yosipovitch et al., 2023) [83]
7	Neurodermatitis	Itchy and scaly skin in the form of patches. Discoid eczema is another name for it.	(Zeng et al., 2023) [85]

Note that every type of eczema is very similar to each other so it is very important to distinguish between them properly to get the proper prescription for the disease (Jackson et al., 2023) [37].

CAUSES OF ECZEMA

As we know that there is no particular reason for causing eczema but there are several environmental and hereditary factors responsible for the disease (Nisar et al., 2023) [59]. Here we are trying to cover the most common factors identified, as causing eczema (Table 3).

Genes – according to studies it is proven that individuals who have a family background of having eczema or asthma or any type of allergies have more chances to get affected by this disease (Lu et al., 2023) [47].

Table 3. Genes involved in skin infection.

S.N.	Genes	Detail	Reference
1	Filaggrin gene	Codes for protein filaggrin, are responsible for the function of the skin barrier, if some mutations occur then a faulty barrier will be a cause for skin allergies.	(Laczynski et al., 2023) [45]
2	FLG-interacting gene	These genes work with the filaggrin in collaboration to maintain the skin barrier function.	(Rios et al., 2023) [64]
3	SPINK5	In the studies, it is found that the persons who suffered from any skin disease mostly have the mutated SPINK5 gene.	(Kato et al., 2003) [40]
4	Genes (involves in encoding the elements of the immune system)	There are several other genes like IL4, IL5, and IL3 which promote allergic inflammation.	(Biagini Myers & Khurana Hershey, 2010) [12]

Environmental factors: this factor contains several types of triggers, which may cause eczema (Zalewski & Szepietowski, 2023) [84]. The general triggers which cause allergies include clothes which were harsh on the body or skin-tight clothes which may produce rashes, so one needs to opt the breathable cloth or skin-friendly cloth fiber like cotton (Zhang et al., 2023) [86]. Climate condition is also responsible for skin infection, if there is a sudden change in the climate or climatic temperature then the skin does react and produce skin allergies (Grafanaki et al., 2023) [29]. This type of allergy was common in an individual with sensitive skin type.

Irritants such as chemicals, soaps, pollens, dander of pets, dust, mites, mold, detergents, and solvents may also be the triggers that come under environmental factors (Mesjasz et al., 2023) [50].

Allergies: allergies are directly connected with eczema as this disease is a type of allergic infection, it is a result of an allergic reaction. There are several types of allergic agents present in our surroundings like dust, mites, pollens, dander, etc., if one can identify his trigger then his treatment becomes so smooth (Holgate & Church, n.d.) [34].

Microbial factor: There is research-proven that one who suffers from eczema has a bacterial imbalance on the surface of the skin, and some of the microbes are also responsible for causing the infection (Joshi et al., 2023) [39].

Stress and hormonal changes: hormonal changes during puberty, pregnancy, or menopause can trigger eczema or even taking a lot of stress may also sometimes trigger the infection (Ramesh et al., 2023) [62].

Scratching or rubbing: scratching or rubbing the infection region may give you relaxation feel at the time of rubbing but it actually worsens the infection (Bai & Sharma, 2023) [6], except rubbing or scratching apply moisturizers on it (Marek-Jozefowicz et al., 2023) [49].

These were the common factors responsible for causing eczema but it may vary from person to person as everyone's trigger point is not same (Xie, 2023) [82]. So, one has to take a proper check on their routine and try to identify the trigger for better treatment.

DIAGNOSIS

There is no proper or exact method for the diagnosis of eczema as the symptoms may vary from person to person. The dermatologist has to physically examine the patients and also analyze the family background to check whether it is genetic or not (Pei et al., 2001) [60].

As we see there is no particular method to diagnose this disease but we have some types of measurements by which a clinician will get to know that the disease is eczema.

Examining the infected area is a simple way to inspect the skin for signs of infection such as red rash, dry skin, swelling, scaling, and itching (Bs et al., 2023) [16].

Analyzing the patient's personal and family background will also be a great help in examining the disease (Russo et al., 2023) [66].

For some cases, the testing of the patched skin, testing the blood, and skin biopsy will also be helpful for diagnosing the disease (Mitchell et al., n.d.) [52].

Note; it is challenging to differentiate eczema from other skin disorders (Cartledge, 2023b) [18]. If anyone has any type of complaint regarding their skin then they must have to go to a certified dermatologist to get the proper treatment (Chen et al., 2023) [20].

TREATMENT

There is no cure for eczema but there is a number of tricks and solution available to reduce the infection's symptoms (Roehr et al., 2001) [65].

Maintaining the moisture of the skin is the only trick to reduce the effect of eczema (Boguniewicz et al., 1998) [14]. Applying anti-inflammatory, anti-itching lotions, ointments which were odorless, and creams made for sensitive skin types are helpful in keeping the moisture of the skin locked and minimizing the effects of the disease (Li et al., 2022) [46] (Hannuksela et al., 1993) [33].

Antibiotics and antihistamines also play a major role in reducing the effects of eczema (Schmitt et al., 2010) [67]. Antibiotics will work against pathogens or bacterial infection which causes skin allergies whereas antihistamines will suppress the unwanted production of histamines (Bath-Hextall et al., 2010) [10], sometimes the body produces histamines even for unnecessary condition and this will trigger eczema so to get rid of these antihistamines will be a great help (Goh et al., 2023) [28]. Antibiotics and antihistamines both can be taken orally or directly apply to the infectious part both ways are available, and these will help in reducing the unpleasant symptoms of eczema and also enhances the quality of skin which will overall increase the quality of one's life (Ziyab et al., 2023) [87].

Light therapy or we can say photo therapy also a very effective way of treating eczema as we treat the disease under a specific wavelength (Musters et al., 2021) [55], under a certain light condition the skin will produce moisture or simply say the sweat regularly takes the light therapy will activate the sweat glands and it will work more effectively than ever before (Grundmann-Kollmann et al., 1999) [30]. Mainly in photo therapy the UVA and UVB collaboratively work together in order to treat the skin, it can be done under the supervision of experts only (Gambichler et al., 2009) [27] (Midelfart et al., 1985) [51].

Some immunosuppressants and drugs will be given in the form of injections in severe conditions as this will take action against the disease in a very short interval of time, simply it is a very quickest way of treatment but only applicable for serious conditions (Murphy & Atherton, n.d.) [54].

It is very important to take the consultation of a clinician because only professionals can suggest the best way to treat your disease after a proper diagnosis (Maleki-Yazdi et al., 2023) [48].

DIETS FOR THE SUFFERERS

There is no specific food by which one can treat their eczema but there are some foods that one can add to their diet to get beneficiary rewards like a reduction in the symptoms of infection (Figure 2).

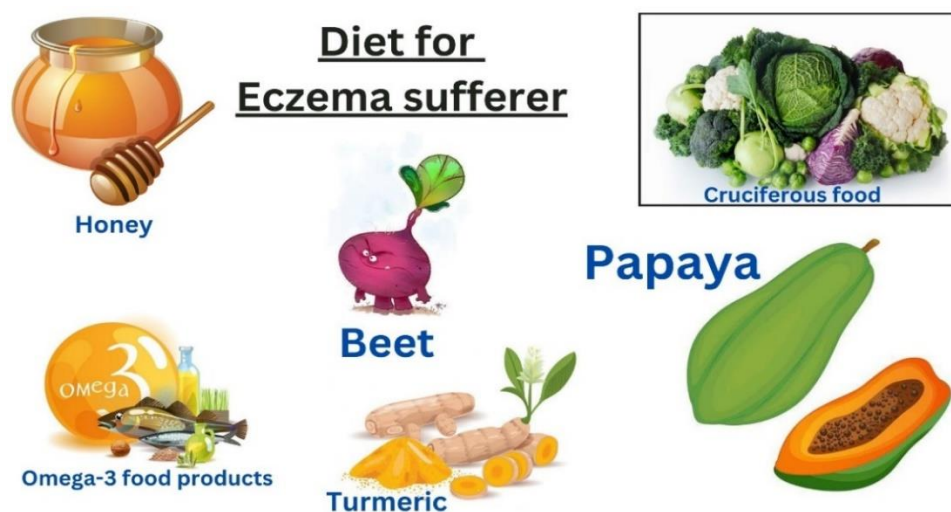


Figure 2. Beneficial diet for eczema patients.

Honey has the anti-inflammatory properties which reduce infection and provide relief whereas food which riches in omega-3 helps to grow new skin and prevent inflammation (Brustad et al., 2023) [15].

Cruciferous foods and turmeric both are best in removing toxins from our bodies, which makes our bodies healthier (Allenova & Darlenski, 2023) [3].

The antioxidant level in papaya is very high which helps to get the skin better, glower, and healthier (Takase et al., 2023) [74]. Healthy skin is also free from infections and disorders. Beets also have antioxidants in them and have Vitamin C which is very essential for the skin (Kurniawan & Matthew, 2023) [44]. They also contain phytochemicals known as betanin, help in retaining the minerals, and also have anti-inflammatory properties [1].

The sufferers must avoid packaged food and take the less oily food made at home [22].

Daily Habits

The sufferer must follow.

The patients have to follow a hygiene routine to get rid of the infection and also avid triggers for better results. Some daily practices are like moisturizing the skin daily after taking the bath to maintain the moisture of the skin (Figure 3).

Use lukewarm water for bathing because the extreme cold and extremely hot water damages the skin and dries it up which triggers eczema (Goh et al., 2023) [28].

Eczema condition is very itchy but sufferers have to keep patience and use anti-itchy lotions or moisturizers to avoid scratching the infected area, as scratching only worsens the condition of eczema (Suzuki et al., 2023) [71].

One has to choose cloth fibers like cotton which were skin-friendly which means they are not harsh on your skin and also are breathable, avoid too tight clothes and synthetic fibers (Reynaert et al., 2023) [63]. Sometimes stress also triggers the eczema condition so it is advised to do daily meditations and take 6-8 hours of sleep daily to avoid stress.

Sufferers can also use humidifiers as they provide moisture in the air and don't let their skin dry, it is great equipment in order to maintain the body's moisture which reduces the infection (Friis et al., 2023) [26].

Patients must meet their dermatologists on a regular basis so the doctor will keep an eye on the eczema condition and provide the proper medication according to it.



Figure 3. Daily practices that suppress the eczema effect.

EFFECT OF COVID ON ECZEMA

In studies, it is found that persons who are suffering from eczema have higher chances to get affected by covid-19 (Naeem et al., 2022) [57] because of the following reasons.

If the person is suffering from covid then his immunity is got so poor that he is not supposed to fight against the allergens and this will allow eczema and many more diseases to grow in them (Symanzik et al., 2022) [72].

The level of stress is increased during the period of the pandemic and we know how good stress is to triggering eczema (Jindal & Pandhi, 2020) [38]. We also see that people will use a lot of sanitizers to get disinfected and sanitizers are very good at killing viruses but they also dried up the skin which can also trigger eczema (Blicharz et al., 2020) [13].

Almost everyone does their work from home and some did not maintain their daily personal cleanliness practices which will again work as a trigger for eczema. And because of the lockdown condition sufferers will not manage to go to their doctors for treatment and the condition of eczema got bad (Piapan et al., 2023) [61].

But this was not bad for eve person because of the personal hygiene practices some people will tend to manage very good and healthy skin, so we have to keep this in mind that the pandemic condition for every person was not the same.

EPIDEMIOLOGY

The epidemiology of eczema is different for everyone according to their age group, geographic region, and background [5].

Some interesting epidemiological facts about eczema was that according to the World Allergy Organization (Thomsen, 2015) [76], it affects more than 20% of children and 3% of adults worldwide. It basically affects children 58-60% are of the age group less than 1 year whereas 80-85% are of the age group less than 5 years, adults may also develop eczema that was less frequent than childhood eczema (Mosam & Todd, 2023) [53]. It is more common in developed or urban areas than in rural areas as the level of stress and pollution is more in urban areas (Haft et al., 2023) [32].

Recent Work on the Treatment of Eczema

Ian Myles is a physician-scientist at the U.S. National Institute of Allergy and Infectious Diseases specializing in internal medicine and allergy and immunology; introduces a live bacteria remedy for treating eczema(Myles, 2020) [56]. His colleagues and he thought that directly spraying live bacteria named *Roseomonas mucosa*—a naturally occurring skin microbe—on the epidermis of eczema patients would result in healthy skin. They reported on the effectiveness of early trials for this therapy in a recent publication published in *Science Translation Medicine* [79].

Ian and his colleague working on a live bacterial spray that helps in treating the eczema effects, they started their study on 15 children as eczema is a common problem amongst children. They noticed a 60 to 75 percent improvement in their rash or itching when they apply *Roseomonas* 2 to 3 times a week for 4 months. Their families also reported that after this remedy the problem of itching will be reduced and they will be able to get better sleep. One patient complained of mild itching for a minute during the spraying, other than this there will be no complaints. Thus, their study on *Roseomonas* appeared to be safe.

One of the promising things they will find in their study is that the patient's symptoms improved for 8 months after stopping the bacterial spray medication. The advantage of using living bacteria here is that they take shelter on the skin and their life is about 8 months so they provide the medication to the patients for 8 months. And this will allow the patients a better life experience.

Theoretically, using the medication as soon as symptoms appear could stop the disease from developing in the future and be "curative"—however, for now, such thinking is speculative. This is not exactly a cure but this will reduce the usage of chemicals and steroids which have many side effects, this living bacterial spray is less harmful and provide long relief from rash and itching.

CONCLUSION

In conclusion, we can say that eczema is a type of skin disorder whose cure is not available yet, but with proper treatment and with personal hygiene routine one can reduce the effects of infection.

Drinking plenty of water and applying moisturizers make the skin hydrated and moisturized, if one doesn't let their skin dry and manage to keep the skin moisturized then eczema will not be there for so long. The sufferer must go to their dermatologists on regular basis to get the proper medication according to the severity of the infection. So, with a proper consultant from doctors, from daily hygiene routine, and with proper diet one can manage to get rid of this disease and live a healthy and happy life.

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