

# Literature Review: Integrative Approaches to Treatment of Eczema

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## 1. Introduction

Atopic dermatitis (AD) is a chronic inflammatory skin condition that affects millions of people across the globe [1]. Explains that the disease affects approximately 200 million individuals from various parts of the globe, up to 20% of children and approximately 10% of the adults. Although the AD primarily affects young children and continues to adulthood, studies have shown that there is a possibility of it emerging in adulthood [1]. notes that about 1 in 4 adults that have developed AD have adult-onset disease. A practical case is that of the female patient in the suggested case study. The patient developed AD about 10 months ago, yet she is 36-years old, an indication that there is a possibility of adulthood onset of AD. The conditions often possess a significant economic burden in terms of the treatment costs, leads to decreased quality of life and increased morbidity rates [2]. According to in Canada, the estimated annual cost of treating AD is approximately \$1.4 billion [3]. In the US, found that from 2016 to 2018, the total annual cost for treating AD among already diagnosed adults was approximately \$10,474 per patient. Despite the presence of these estimates, explain that it is often difficult to accurately estimate the economic burden of AD due to its broad severity levels and several cost contributors that are attached to indirect and direct costs [3]. This piece will draw on various literature and the provided case study to examine the causes of AD, its symptoms, and evidence-based treatment approaches that can be utilized for treatment. The treatment approaches will be categorized into traditional and non-traditional.

### 1.1. Protocol

This question this review address is “what factors trigger AD in individuals and what are the major symptom and approaches which can be used for treatment and prevention?” The literature that will be utilized in this review will be drawn from various databases such as PubMed, ScienceDirect, Scopus, and Web of Science. The keywords that will be utilized during the search of sources include “Atopic dermatitis,” “Eczema,” “Pathophysiology of Atopic dermatitis,”

“Symptoms of Atopic dermatitis” and “treatment interventions for Atopic dermatitis.” The inclusion criteria

will be articles that are written in English, have extensively explored AD and not older than five years. The exclusion criteria are articles that are more than six years old, not peer-reviewed or scholarly, and not written in English or without an English translation. Each section will draw on the identified literature and the case study to make conclusions on their specific themes.

### 1.2. Literature Review

**Causes / Pathophysiology of AD:** that AD is caused by the interaction between an impaired skin barrier and environmental irritants and allergens, which leads to allergic sensitization and skin inflammation [2,4]. Household items such as shampoos, soaps, laundry detergents, and body wash form the most common environmental irritant that lead to inflammation of the skin. This inflammation causes creases of the skin particularly in areas behind knees, elbows and other body skin areas that rub against each other [4]. note that a defective skin barrier is caused by decreased levels of ceramides that play a vital role in preventing trans epidermal water loss and skin's barrier functions [5]. explain that a weak barrier function, undermines the ability of the skin to retain moisture and protect against bacteria, irritants and other factors that increase the risk for AD. explain that a dysfunctional skin barrier also increased the risk for infections [6].

Another potential factor that can induce AD is genes. that Individuals with a family history of AD are highly susceptible to the condition. In reference, to the provided case study, the patient in question had a family history of AD as her mother had history of AD during her childhood [7]. Based on this insight, it can be then concluded that individuals can inherit AD genes. explain that AD can be inherited since studies have found that individuals born in families in which one of parents has or had a history of AD are likely to also become victims of the chronic condition [8]. Specifically, that history of AD in one parent is estimated to increase a child's risk to the condition 1.5-fold. The familial aggregation of the condition is mediated by the shared genes and the environment. Studies that have studied the prevalence of twins to AD have shown a concordance rate of 72-86% among monozygotic twins (have 100% gene similarity) and 21-23% among dizygotic

twins [8]. Based on these findings, the studies conclude that genetic contribution to AD is substantial, and the heritability rated is between 70-80%.

### 1.3. Symptoms of AD

AD or eczema can occur in any part of the patient's body and has several symptoms. Referring to the provided case study, one of the symptoms can be identified as persistent and itchy skin rashes. This symptom occurs on body parts such as inside of the elbows, back of the neck and knees [6]. explain that the distribution of skin rashes as a result of AD varies depending on the age of the victim. For instance, the infants have an increased risk of developing widely distributed dry and erythematous patches that are characterized with small excoriations that adults. However, as the child ages, the rashes tend to be localized and affected mostly extensors surfaces like knees, ankles and elbows [6]. The other vital symptom of AD is the Dennie-Morgan lines, which are crease-like wrinkles that occur below the patient's eyelid [9]. concluded that this symptom is common in India, followed closely by Europe and Africa, and is not often diagnosed in Americas and Iran. Nevertheless, it is one of the major symptoms that can be utilized to identify individuals suffering from eczema.

Identifies other symptoms as oozing and crusting, thickening of the skin, and raised bumps either of brown or black skin [5,8,10]. According to American Academy of Dermatology Association the crusting is as a result of the scratching which make the spots to leak fluid and eventually crust over. Further, that adults are more likely than children to develop symptoms of AD on their hands and eyes. In the hands, a thickened skin that is often darker than the surrounding skin can be observed [10]. Other than these symptoms, individuals suffering from AD are also vulnerable to other chronic conditions such as Asthma. explain that AD is closely linked to food allergy and asthma, and it is the first step towards the development of other atopic diseases [11]. Nevertheless, the diseases can also occur after Asthma and allergic rhinitis. quotes a previous study and explains that the prevalence of asthma among AD patients is about 27.5%. This is because both diseases are often mediated by genetic predisposition [11].

### 1.4. The Conventional Approach to Atopic Dermatitis Treatment

Atopic Dermatitis is a complex condition that requires treatment interventions targeting this condition to be complex in equally measure. However, it should be noted that no known cure can be pin pointed to be effective in treating atopic dermatitis. Presently, the treatment and management of this condition can be accomplished by leveraging either conventional/ traditional interventions, non-traditional interventions or the integration of the two treatment modalities. This section of the review provides insights into the conventional and non-conventional treatment options of atopic dermatitis, while providing insights into how the se to can be integrated to treat and manage this condition.

### 1.5. Conventional Treatment

As noted earlier, the treatment and management of atopic

dermatitis can be achieved through conventional means [12]. According to the conventional or traditional treatment and management of this condition usually entails the application of a multitargeted approach intended at enhancing the skin's barrier function and result in the reduction of inflammation and itching. Notably, conventional treatment for this condition usually focuses on negating bacterial colonization and actors associated with triggering flare-ups [12]. Additionally, the other goals associated with the conventional treatment of atopic dermatitis include controlling and managing dry skin, preventing infectious and promoting healing [13].

Conventional therapy for Atopic Dermatitis, which is usually considered as the first line of treatment can either be topical and systemic [12]. According to some of the topical agents leveraged in the conventional treatment and management of this condition include corticosteroids, calcineurin inhibitors, moisturizers, antimicrobials/antiseptics, and calcineurin inhibitors. Additionally, conventional topical treatments include wet wrap therapy. It is worth noting that the topical treatments mentioned above are mostly leveraged in mild to moderate Atopic Dermatitis [12]. According to severe forms of this condition often require the implementation of systemic interventions including phototherapy, systemic corticosteroids, cyclosporine, methotrexate, mycophenolate mofetil and azathioprine.

As noted earlier, moisturizers fall in the class topical class of conventional therapies for Atopic Dermatitis [14]. According to the use of moisturizers in managing Atopic dermatitis is predicated on their suitability and efficacy in combating xerosis [12]. note that xerosis has been identified to render the epidermal barrier dysfunctional and facilitate trans epidermal water loss. With that in mind, xerosis comes out as a critical clinical feature associated with this condition. Notably, moisturizers work by reducing the severity of this condition and patients are advised to apply moisturizers at least once a day. According to moisturizers typically contain several ingredients including humectant, occlusive, and emollients [14]. The humectant ingredient in moisturizers has been noted to comprise urea, glycerol and lactic acid which pay a critical role in negating dry skin by apportioning the skin the property to attract and hold water. On the other hand, the occlusive ingredient in moisturizers which contains mineral oil, petroleum, and dimethicone is usually reduces the skin's evaporation rates by forming a layer over the skin. Lastly, the varying amounts of emollient contained in m moisturizers comprise and glyceryl stearate, soy sterols, or glycol, and plays a critical role in softening and lubrication the skin.

As noted earlier, the other conventional therapy for Atopic Dermatitis besides moisturizers concerns topical corticosteroids [15]. According to topical corticosteroids have been noted to be effective in reducing inflammation through the suppression of pro-inflammatory cytokines and impeding antigen processing. The efficacy of topical corticosteroids in the management and treatment of Atopic Dermatitis has also been associated with the propensity to act immune cells such as the macrophages, dendritic cells, T

lymphocytes, and monocytes [15].

Another conventional treatment modality for atopic dermatitis is wet wrap therapy (wwt) According to wet wrap therapy is treatment modality leveraged when cases involve severe flare-ups and recalcitrant [12]. As the name suggests, this intervention usually entails the application of moisturizers, topical corticosteroids, or the combination of these two followed by the use of a gauze, cotton suit, or tubular bandages to cover the first layer (wetted) which is then followed by a dry layer [16]. According to this therapeutic modality has been associated with enhanced penetration of the topical agents used and significant negation in skin water loss. Despite the efficacy of this treatment modality, it has several throwbacks with the negated practicability and intolerance among children topping the list.

Another conventional treatment leveraged in the management of Atopic Dermatitis concern topical calcineurin inhibitors. According to Papier and this treatment usually works through the inhibition and blockage of calcineurin-dependent T-cell activation and pro-inflammatory cytokines. With that in mind, topical calcineurin inhibitors are usually recommended for acute and chronic treatment of Atopic Dermatitis [17].

As noted earlier, systemic therapies can also be leveraged in the treatment and management of eczema [12]. According to phototherapy is one of the systemic treatment modalities for Atopic Dermatitis and is usually applied as a second second-line treatment in cases where the moisturizers, topical steroids, and TCIs fail. Notably, this treatment technique usually encompasses the application of light therapy to control the signs and symptoms of this condition. The other systemic therapeutic modality for eczema is the use of systemic corticosteroids. According to the use of this modality should be as the last option considering the adverse effects it proffers on patients [12]. With that in mind, systemic corticosteroids are usually reserved for cases that are acute and severe and should be incorporated as a shortterm bridge towards other systemic therapies for atopic dermatitis [14]. Cyclosporine presents another systemic therapy for Atopic Dermatitis. According to, Cyclosporine comes out as an immunosuppressant which works by suppressing the production of interleukin-2 and T-cells. This treatment modality has been noted to be effective for patients with severe forms of eczema.

### 1.6. Alternative Modes of Treatment

Besides the convention methods, several alternative treatments of Eczema have been studies and applied with significant efficacy noted [18]. According to acupuncture is one of the non-conventional treat modalities for Eczema. Notably, acupuncture has been noted to be effective in alleviating the itching associate with this condition especially when applied to the large intestines. Besides acupuncture, research has also indicated that stress management techniques are also effective in the treatment and management of eczema.

According to tress has been associated with triggering Eczema due to the hormonal spikes associate with stressing situations. Besides, Stress has also been noted to result in the weakening the skin's barrier function, thereby enhancing the susceptibility of healthy individuals to have Atopic dermatitis. Utilization of techniques such as massage and hypnosis can serve as an effective approach to the treatment and management of AD [19]. Other than these techniques suggest that the use of prebiotics and probiotics can serve as other vital nonconventional approaches to treating this condition. Probiotics (functional food) supplement the gut with what is often termed "good bacteria," while prebiotics stimulates the growth of these bacteria on an individual's skin and gut, leading to an improved intestinal barrier [20]. As a result, they help in minimizing the allergic phenomenon and AD severity.

### 1.7. Integration of Conventional and Non-Conventional

That both conventional and non-conventional approaches play a critical role in the management of AD [12]. Despite that, it is vital to note that conventional medicine does not guarantee 100% alleviation of symptoms of AD. Further, in some instances, conventional medications like steroids can negatively react to some patients and worsen their condition. As a result, healthcare providers must opt for complementary interventions so as to provide safe and high-quality care to AD patients [12]. However, it is also critical to incorporate the patients' views while selecting the treatment and care plan to ensure that patients are comfortable with the selected options while maximizing on their efficacy.

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