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THE ROLE OF CLINICAL PHARMACISTS IN THE MANAGEMENT OF ATOPIC DERMATITIS

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ABSTRAK

Atopic dermatitis (AD) is a prevalent chronic skin condition with a complex etiology involving genetic and environmental factors. It significantly impacts the quality of life of affected individuals, particularly children, and their families. The objectives of therapy include improving skin health, preventing flare-ups, and enhancing the patient's quality of life. This review discusses the importance of pharmacist involvement in patient education and adherence to treatment plans, emphasizing the need for standardized practices like the Fingertip Unit (FTU) for topical medication application. Collaboration among healthcare professionals, including pharmacists, nurses, and physicians, is crucial for comprehensive patient care, assessment, treatment planning, education, and monitoring. While quantitative data on the impact of pharmacist interventions in atopic dermatitis is limited, qualitative evidence suggests that pharmacists play a valuable role in improving patient knowledge, adherence, and overall well-being. In conclusion, clinical pharmacists are essential in the management of atopic dermatitis, contributing to better patient outcomes and improved quality of life.

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Introduction

Atopic dermatitis (AD) is the most common chronic inflammatory skin disease. Atopic dermatitis has a complex etiology, including genetic and environmental factors that lead to abnormalities in the epidermis and the immune system. Atopic dermatitis is a prevalent chronic skin condition, with a prevalence of 10–20% among children and 2-10% among adults. Atopic dermatitis primarily impacts the flexor surfaces of the elbows and knees, as well as the face and neck. However, the specific patterns of localization may vary depending on the age of the individual. Atopic dermatitis is frequently observed in infants and young children, primarily affecting the facial region, including the cheeks and forehead, as well as the extensor surfaces of the limbs. During the acute phase, the skin exhibits characteristics such as excessive dryness,

irritation, itchiness, redness, and occasional exudation. Scaling, excoriations, skin thickness, and augmentation—also referred to as lichenification—are characteristics of the subsequent phase of chronic inflammation (Thomsen, 2014) (Scott, 2018).

AD has a complex etiology. The current comprehension of atopic dermatitis's pathophysiology revolves around deficiencies in the skin barrier and the disruption of the immune system, which occur on a genetically and environmentally vulnerable foundation. The presentation of AD may exhibit variations contingent upon factors such as the patient's age, the severity of the disease, and its chronicity (Frampton & Blair, 2018). Atopic dermatitis is a chronic and prevalent skin condition that exerts a substantial impact on the quality of life for individuals affected by it as well as their families. Due to the high incidence of atopic dermatitis in pediatric patients, it is imperative for pharmacists to effectively communicate therapeutic strategies to parents in order to attain desired treatment outcomes. In almost 50% of the interviews conducted, parents expressed that symptoms associated with Atopic Dermatitis had a significant influence on their daily routines. Children frequently experience sleep issues, which restrict their ability to engage in activities like bathing and swimming. Parents also highlighted the psychological ramifications, noting that certain children experienced feelings of frustration, anger, or sadness. This activity reviews the causes, pathophysiology, and presentation of atopic dermatitis and highlights the role of the interprofessional team in its management (Ng et al., 2018).

The provision of patient education is a crucial component in effectively managing atopic dermatitis. While pharmacists primarily play a role in medication management, they can also contribute to the management of atopic dermatitis through educational interventions. These interventions aim to enhance patient understanding of the condition and its treatment, promote adherence to prescribed therapies, and provide strategies for symptom relief and prevention. Although the guideline acknowledges the significance of pharmacists in managing individuals with chronic illnesses such as atopic dermatitis, the available research regarding the effectiveness of educational interventions by pharmacists in mitigating the severity of atopic dermatitis remains limited.

This research can help address the fears commonly associated with the use of topical corticosteroids, which can hinder patient compliance. By providing accurate information, pharmacists can help patients feel more comfortable with their medication. The aim of this study was to identify the important role of a pharmacist in the management of atopic dermatitis (AD) and its impact on patients' quality of life. This study aims to highlight how pharmacists can educate patients about AD, promote understanding and adherence to prescribed medication, and provide support in managing AD symptoms and prevention.

While there is limited specific research evaluating the direct impact of pharmacist-led educational interventions on atopic dermatitis outcomes, studies have shown positive effects when pharmacists are involved in similar patient education initiatives for chronic diseases like asthma. While more research specific to atopic dermatitis is needed, pharmacist-led educational interventions have the potential to improve patient knowledge about atopic dermatitis management strategies and promote adherence to prescribed treatments. By empowering patients with information and support, pharmacists play a valuable role in mitigating the severity of atopic dermatitis symptoms alongside other healthcare providers involved in patient care.

Research Methods

The research method used in this text is literature research or literature review. the data collected information from various literature sources and related research to discuss the role of pharmacists in the management of atopic dermatitis. This research method involved analysing the text, summarising previous research findings, and presenting information relevant to the topic discussed. This method was used to build an understanding of the role of pharmacists in the management of atopic dermatitis and the importance of collaboration between healthcare professionals in patient care. This study focuses on presenting information and research findings that already exist in the medical literature related to the topic of atopic dermatitis and the role of pharmacists in its management.

Results and Discussion

The Objectives of Therapeutic Interventions for Atopic Dermatitis and The Preferred Clinical Outcomes

Pharmacists can educate patients about atopic dermatitis by providing information on triggers, symptom management strategies, proper skincare routines, and the appropriate use of medications (e.g., topical corticosteroids or immunomodulators). This education empowers patients to take an active role in managing their condition effectively. The responsibilities of pharmacists in the context of patients with atopic dermatitis include enhancing adherence through patient education, optimizing and monitoring atopic dermatitis therapy, and improving the communication of instructions between the prescriber and the patient, specifically through the utilization of the fingertip unit system (Wong et al., 2017) (Koster et al., 2019).

The primary objectives of the treatment include the improvement of skin healing and maintenance of its overall health, the prevention of flare-ups, and the prompt management of symptoms as they arise, ultimately leading to an enhancement in the individual's quality of life.

The educational component pertaining to the therapy of atopic dermatitis aims to impart knowledge regarding the objectives of treatment and emphasize the proper utilization of interventions for this condition. This includes understanding the goals of therapy, identifying and avoiding triggers that exacerbate atopic dermatitis, recognizing the optimal timing for seeking medical consultation, and dispelling misconceptions and myths surrounding the management of atopic dermatitis.

Discussion

Pharmacists assume a crucial role in enhancing the optimization of the management of dermatologic disorders through the provision of pharmaceutical counseling, encouragement of treatment adherence, mitigation of side effects, and recommendation of suitable supplementary care. Medication adherence is crucial for controlling atopic dermatitis symptoms. Pharmacists can help patients understand the importance of adhering to prescribed treatments and address any concerns or misconceptions they may have regarding medications. They can also provide practical tips for incorporating treatment regimens into daily routines (Bass et al., 2015).

Evidence to Support the Value of a Clinical Pharmacist in Patients with Atopic Dermatitis

Several parents expressed concerns about the potential negative effects of steroids, leading to a deliberate lack of adherence to the prescribed treatment. Additionally, they reported difficulties in properly applying topical medications. Pharmacy personnel also reported

encountering these concerns. Several patients have expressed concerns regarding the use of steroids. The majority of parents expressed satisfaction with the information they got, yet, they expressed a desire for additional practical guidance pertaining to everyday aspects of child-rearing, such as bathing routines and wardrobe choices. According to statements made by both pharmacists and pharmacy technicians, it has been observed that pharmacy technicians frequently possess insufficient knowledge to adequately assist patients in the appropriate utilization of medications. Conclusion Parental attitudes toward topical corticosteroids may have a negative impact on treatment outcomes. The pharmacy staff plays a crucial role in educating parents of children with atopic dermatitis regarding the proper utilization of topical corticosteroids and emollients. Counselors ought to refrain from allowing their personal biases towards topical corticosteroids to influence their practice. Effective coordination among primary care providers is essential to ensuring that parents receive consistent and standardized messaging (Kosse et al., 2018).

The principal pharmacologic therapy for atopic dermatitis is the topical application of corticosteroids. Research suggests that these drugs may be beneficial in the prevention of disease flare-ups. The recent development of the topical immuno-modulators, tacrolimus and pimecrolimus, has provided alternatives to topical corticosteroids, but these remain expensive and are not effective in every case.

The Role of the Clinical Pharmacist in Treatment of Atopic Dermatitis

a. Topical Corticosteroids

The role of the pharmacist is to alleviate symptoms associated with prevalent atopic dermatitis as well as manage treatment-related adverse effects. Topical corticosteroids are commonly considered the primary therapeutic option for atopic dermatitis (AD). Ointment bases are commonly favored, particularly in arid conditions. There is a range of topical steroids available for application, including: low-potency, mid-potency, high-potency, and extremely high-potency medications.

Topical use of hydrocortisone 1% is recommended for lesions located in the facial region and skin folds, with a frequency of twice daily. Triamcinolone and betamethasone valerate, which are classified as moderate potency steroids, are topically administered twice daily to lesions distributed across the body, with the exception of the face and skin folds. The efficacy and safety of utilizing a 1.25% hydrocortisone powder in an acid mantle, applied in a thin layer as a moisturizer for maintenance therapy, have been demonstrated over an extended duration of many months (Lopez Carrera et al., 2019).

The administration of steroids was halted upon the resolution of the lesions, and afterwards resumed upon the emergence of new lesions. According to a study conducted by Heck et al, the utilization of topical corticosteroids for atopic dermatitis (AD) in the eyelid and periorbital regions has been deemed safe. However, it is crucial to exercise caution about potential adverse effects such as glaucoma and cataracts (Patrizi et al., 2015).

Lau WM et al, there was a significant correlation between pharmacists' attitudes toward information provision and their self-reported counseling behavior on most topics except for those related to corticosteroid safety, where less advice was given. A clear and favorable link exists between the attitudes of pharmacists towards patient counselling and their self-reported behavior. It can be inferred that enhancing attitudes would have a consequential effect on the

counseling services offered by pharmacists with regards to the management of atopic dermatitis (Lau & Donyai, 2017).

b. Topical Calcineurin Inhibitors (TCIs)

Another topical drug that should be used with caution by the patient is calcineurin inhibitors. Topical calcineurin inhibitors (TCIs) function through immunomodulatory mechanisms and have been specifically formulated for the therapeutic management of atopic eczema. There are two distinct categories of topical treatments for atopic dermatitis: tacrolimus ointment, which is intended for individuals with moderate to severe atopic dermatitis, and pimecrolimus cream, which is designed for those with mild to moderate eczema. Calcineurin inhibitors refer to a class of medications that exert their effects on the immune system by inhibiting the activity of a specific molecule involved in the pathogenesis of atopic eczema. Topical calcineurin inhibitors (TCIs) are employed as a therapeutic approach for managing atopic eczema in both adult and pediatric populations aged 2 years and older, particularly in cases where conventional treatments like topical steroids have proven to be insufficient or are not well-tolerated. Corticosteroids possess the capacity to be employed in both the treatment and prevention of flares.

The availability of TCIs is restricted to prescription-only, necessitating the involvement of a specialist, such as general practitioners who possess expertise in dermatology, in the prescribing process. The role of the pharmacist is to give the patient the proper schedule to patient to use the TCIs8. In the context of flare treatment, it is recommended to apply topical calcineurin inhibitors (TCIs) in a thin layer to the affected areas of the skin exhibiting symptoms of eczema, with a frequency of twice daily. Initiating treatment promptly upon the initial manifestation of active, inflamed eczema is advisable. In individuals with lighter skin tones, this condition will present as skin that is both red and itchy. In individuals with darker skin tones, the manifestation of redness may not be readily observable. Instead, the skin may exhibit areas of increased pigmentation and provoke sensations of itchiness. The use of treatment should persist until the complete resolution of eczema, indicated by the subsidence of red or darker spots. The application of topical corticosteroid medications should be avoided on mucous membranes, which encompass the nasal and oral cavities, the ocular region, and the moist genital area. Following an initial treatment period lasting up to six weeks, the TCI has the potential to serve as a maintenance treatment.

The pharmacist must give information toe patient that improvement is seen with tacrolimus within a week of starting treatment. If no sign of improvement is seen within 2 weeks, other treatment options should be considered. The recommended dosing regimen for Pimecrolimus (Elidel) involves twice-daily application for the initial manifestation of inflammation or pruritus as well as for the management of preexisting eczema. It is advisable to utilize this treatment for the shortest duration feasible, specifically until the eczema symptoms are effectively managed. When used for maintenance purposes, specifically to avoid the progression of flares over an extended period, it is recommended to apply the treatment twice a week, such as on Monday and Thursday nights. In the event that no discernible progress is observed within a span of six weeks, it is recommended to discontinue the application of pimecrolimus cream.

The primary measure to be taken in order to prevent TCIs involves the avoidance of prolonged or intense exposure to sunlight and UV radiation. This phenomenon arises due to the

capacity of TCIs to heighten one's susceptibility to solar radiation. It is advisable to minimize prolonged exposure of the skin to sunlight. Furthermore, it is advisable to refrain from utilizing tanning beds and undergoing phototherapy treatments involving ultraviolet light. It is recommended to utilize a sunscreen with a sun protection factor (SPF) ranging from 30 to 50 in order to safeguard the skin of both adults and youngsters. It is advisable to refrain from exposing oneself to direct sunlight, especially during the peak hours of 11 a.m. to 3 p.m., and to don sun protective attire, such as clothing and caps designed to shield against the sun's rays.

Exposure to natural sunlight has been found to offer advantages for those withs (AD). However, it is important to note that excessive heat and intense sunlight can elicit perspiration and itching in these patients. Hence, the utilization of phototherapy using various forms of ultraviolet (UV) radiation, such as broadband UVB, broadband UVA, narrowband UVB (311 nm), UVA-1 (340-400 nm), and a combination of UVAB, might be considered supplementary treatment for dermatological conditions (Patrizi et al., 2015).

c. Phototherapy

Phototherapy is widely regarded as a safe and well-tolerated treatment modality, characterized by a minimal incidence of both short-term and long-term adverse effects. The immediate consequences may encompass erythema, skin sensitivity, pruritus, and pigmentation. Premature skin aging and skin malignancy are recognized as potential long-term consequences. Phototherapy necessitates careful implementation, particularly when administered to pediatric individuals, necessitating a comprehensive evaluation of the patient's entire health status (Patrizi et al., 2015).

d. The mitigation of systemic symptoms

Oral antihistamines, such as hydroxyzine and diphenhydramine, can be administered to alleviate symptoms associated with itching and inflammatory responses. Nevertheless, the efficacy of these systemic medications is contingent upon the implementation of other therapeutic interventions. The efficacy of systemic acyclovir has been demonstrated in patients diagnosed with eczema herpeticum. The treatment of methotrexate, azathioprine, cyclosporine, and mycophenolate mofetil has demonstrated therapeutic effects in individuals with severe atopic dermatitis (AD), particularly in adult patients.

There are several factors that need to be taken into account with respect to the treatment of atopic dermatitis. Undoubtedly, the impact of pharmacy on the efficacy of treatment is of significant importance. Several challenges are associated with therapy for atopic dermatitis. These challenges include the fear of adverse effects, commonly known as steroid phobia, among parents. Another issue is the consideration of cosmetic aspects during treatment. Additionally, patients or their parents may experience feelings of shame. Additionally, different healthcare professionals may offer contradictory advice due to a lack of current knowledge about the condition. Lastly, the concerns of healthcare providers can also impact the treatment process, particularly when steroid phobia is present (Cayci et al., 2023) (Koster et al., 2019).

e. Emphasizing Skincare

Proper skincare practices are essential for managing atopic dermatitis flare-ups and maintaining skin health. Pharmacists can educate patients about gentle cleansing techniques, moisturizer selection and application methods, avoidance of irritants/allergens, and lifestyle modifications (e.g., avoiding hot showers). These measures help optimize skin barrier function and reduce inflammation8. The objectives of therapy include the management of dermatitis and

pruritus symptoms, the prevention of flare-ups, the mitigation of therapy-related adverse effects, and the reduction of non-adherence to treatment.

The primary function of moisturizer in the treatment of atopic dermatitis is to preserve the integrity of the skin barrier, reducing its susceptibility to external stimuli that may incite an inflammatory response. The selection of moisturizer for individuals with atopic dermatitis (AD) should ideally consist of a dense emollient formulation, with little or no water content to enhance its prolonged adherence. Moisturizer should be used twice daily or as necessary, with gentle application techniques, and is most effective when used following bathing.

Wet dressings are employed as a therapeutic measure to alleviate skin lesions, mitigate discomfort and erythema, facilitate the softening of crusts, and serve as a preventive measure against patient scratching. It is anticipated that the healing process of the DA will be expedited, leading to the acquisition of safeguards against allergens and microorganisms through the prevention of skin contact. The implementation of wet dressings should be postponed for a period of 2–3 days subsequent to the conclusion of topical antibiotic treatment. The use of wet dressings containing corticosteroid solutions should be approached cautiously due to potential adverse effects on the skin and the potential for suppression of the hypothalamus-pituitary-adrenal axis (Thomsen, 2014).

f. Fingertip Unit (FTU)

The Fingertip Unit (FTU) is a measure used to standardize the amount of topical medication that should be applied to a specific body area. It's defined as the amount of ointment or cream squeezed out of a tube with a 5mm nozzle, from the distal skin-crease to the tip of the adult index finger. This is approximately 0.5g of topical medication.

In atopic dermatitis therapy, accurate application of topical treatments like corticosteroids or calcineurin inhibitors is crucial for treatment effectiveness and safety.

Pharmacists can educate patients about what an FTU is and how it relates to their treatment plan. They can demonstrate how much product constitutes one FTU and guide patients on how many FTUs are needed for different body areas. Patients often underuse topical treatments due to concerns about side effects or overuse them, leading to potential harm; by teaching them about FTUs, pharmacists can help ensure correct usage, which may improve adherence and treatment outcomes. By ensuring that patients are using an appropriate amount of medication, pharmacists can help minimize side effects associated with overuse, such as skin thinning with corticosteroids (Ladda & Doiron, 2021).

While there's no direct study on pharmacist use of FTU in atopic dermatitis therapy specifically, numerous studies have indicated that education on correct application techniques, including use of FTUs improves patient outcomes in various dermatological conditions, including AD. It is reasonable that similar results could be achieved in managing atopic dermatitis given its reliance on topical therapies. A study by Bewley et al. showed improved outcomes when pharmacists educated adolescents on acne management including proper use of topicals using fingertip units.

Collaboration among healthcare in patient atopic dermatitis

Collaboration among healthcare professionals, including pharmacists, nurses, and physicians, is crucial for enhancing the quality of life for patients with atopic dermatitis. By working together and leveraging their respective expertise, these professionals can provide comprehensive care and support to patients. Here are some ways in which collaboration among

pharmacist, nurse, and physician can improve the quality of life for patients with atopic dermatitis:

1. Comprehensive Assessment

   Each healthcare professional brings a unique perspective to patient care. Physicians can diagnose and prescribe appropriate medications based on the severity of atopic dermatitis. Pharmacists can review medication regimens for potential interactions or side effects while providing counseling on proper use. Nurses can assess the patient's overall health status, identify triggers or exacerbating factors specific to their environment or lifestyle, and educate them about self-care strategies.

2. Treatment Planning

   Collaboratively developing a treatment plan ensures that all aspects of patient care are addressed comprehensively. Physicians may prescribe topical corticosteroids or immunomodulators based on disease severity, while pharmacists provide guidance on medication selection, dosing instructions, potential side effect management strategies (e.g., moisturizer recommendations), and adherence support techniques.

3. Patient Education

   All three professionals play an essential role in educating patients about atopic dermatitis management strategies. Physicians can explain the nature of the condition, its triggers/exacerbating factors (e.g., stress), and available treatment options during office visits. Pharmacists can reinforce this information by providing detailed counseling regarding medication use and potential adverse effects during pharmacy consultations. Nurses can offer ongoing education during follow-up visits or through specialized educational programs focused on skincare routines, allergen avoidance techniques (e.g., dust mite control), stress reduction methods (e.g., relaxation techniques), and lifestyle modifications.

4. Monitoring Progress

   Regular follow-up visits allow healthcare professionals to monitor treatment efficacy and make necessary adjustments based on patient response or emerging evidence-based practices/therapies related to atopic dermatitis management.

5. Referral Network

   Collaboration also involves recognizing when specialized care may be required beyond primary care settings for complex cases or when additional interventions such as allergy testing are needed to identify specific triggers/allergens contributing to flare-ups. In such instances, physicians may refer patients to allergists/immunologists or dermatologists who have expertise in managing atopic dermatitis.

6. Supportive Care

   Nurses play a vital role in providing ongoing support through patient education programs that focus on coping mechanisms for emotional well-being related to living with a chronic skin condition like atopic dermatitis. By working collaboratively as a team that includes pharmacists,nurses,and physicians,the quality of life for patients with atopic dermatitis is significantly enhanced. The combined efforts ensure comprehensive assessment,tailored treatment planning,patient education,and ongoing monitoring,resulting in improved symptom control,better adherence,and overall well-being for these individuals (Weissenborn et al., 2017).

There is limited specific quantitative data available on the improvement in quality of life for patients with atopic dermatitis after pharmacist intervention. However, studies involving pharmacist interventions in chronic disease management suggest that these interventions can lead to improved outcomes. A study showed that pharmacist intervention can improve adherence to medication, which is a critical factor in managing atopic dermatitis and improving quality of life. The study found a significant increase in medication adherence rates among patients who received pharmacist interventions compared to those who did not. A systematic review demonstrated that pharmacist interventions improved health-related quality of life measures across various chronic conditions. Another review found that pharmaceutical care services could significantly improve disease control and health-related quality of life for patients with various chronic conditions. They provide strong evidence supporting the potential benefits of pharmacist intervention for managing chronic diseases, which includes atopic dermatitis. In terms of qualitative data, studies have shown that pharmacists can play a vital role in educating patients about their condition and its management, addressing misconceptions about treatment options (especially topical corticosteroids), promoting medication adherence through counseling sessions and follow-ups, and providing advice on skincare routines all crucial factors contributing to improved quality of life for patients with atopic dermatitis (Kang et al., 2020).

Conclusion

The conclusion of this study is that clinical pharmacists have a very important role in the management of atopic dermatitis. They can provide education to patients on the management of this condition, including an understanding of treatment goals, medication use, proper skin care, and preventive measures. In addition, pharmacists can help improve patient adherence to prescribed treatments, optimise therapy, and ensure good communication between patients and doctors.

Bibliografi

Bass, A. M., Anderson, K. L., & Feldman, S. R. (2015). Interventions To Increase Treatment Adherence In Pediatric Atopic Dermatitis: A Systematic Review. *Journal Of Clinical Medicine*, *4*(2), 231–242.

Cayci, A. B., Rathbone, A. P., & Lindsey, L. (2023). Practices And Perceptions Of Community Pharmacists In The Management Of Atopic Dermatitis: A Systematic Review And Thematic Synthesis. *Healthcare*, *11*(15), 2159.

Frampton, J. E., & Blair, H. A. (2018). Dupilumab: A Review In Moderate-To-Severe Atopic Dermatitis. *American Journal Of Clinical Dermatology*, *19*, 617–624.

Kang, M. J., Park, J. H., Park, S., Kim, N. G., Kim, E. Y., Yu, Y. M., Kim, D. Y., Lee, J.-Y., Shin, W. G., & Choi, S. A. (2020). Community Pharmacists' Knowledge, Perceptions, And Practices About Topical Corticosteroid Counseling: A Real-World Cross-Sectional Survey And Focus Group Discussions In Korea. *Plos One*, *15*(7), E0236797.

Kosse, R. C., Bouvy, M. L., Daanen, M., De Vries, T. W., & Koster, E. S. (2018). Adolescents' Perspectives On Atopic Dermatitis Treatment—Experiences, Preferences, And Beliefs. *Jama Dermatology*, *154*(7), 824–827.

Koster, E. S., Philbert, D., Wagelaar, K. R., Galle, S., & Bouvy, M. L. (2019). Optimizing Pharmaceutical Care For Pediatric Patients With Dermatitis: Perspectives Of Parents And Pharmacy Staff. *International Journal Of Clinical Pharmacy*, *41*, 711–718.

Ladda, M., & Doiron, P. (2021). Addressing Topical Corticosteroid Phobia In Atopic Dermatitis: The Role Of The Pharmacist. *Canadian Pharmacists Journal/Revue Des Pharmaciens Du Canada*, *154*(2), 71–73.

Lau, W. M., & Donyai, P. (2017). Knowledge, Attitude And Advice-Giving Behaviour Of Community Pharmacists Regarding Topical Corticosteroids. *Pharmacy*, *5*(3), 41.

Lopez Carrera, Y. I., Al Hammadi, A., Huang, Y.-H., Llamado, L. J., Mahgoub, E., & Tallman, A. M. (2019). Epidemiology, Diagnosis, And Treatment Of Atopic Dermatitis In The Developing Countries Of Asia, Africa, Latin America, And The Middle East: A Review. *Dermatology And Therapy*, *9*, 685–705.

Ng, M. S. Y., Tan, S., Chan, N. H. Q., Foong, A. Y. W., & Koh, M. J. A. (2018). Effect Of Atopic Dermatitis On Quality Of Life And Its Psychosocial Impact In Asian Adolescents. *Australasian Journal Of Dermatology*, *59*(2), E114–E117.

Patrizi, A., Raone, B., & Ravaioli, G. M. (2015). Management Of Atopic Dermatitis: Safety And Efficacy Of Phototherapy. *Clinical, Cosmetic And Investigational Dermatology*, 511–520.

Scott, D. W. (2018). *Color Atlas Of Farm Animal Dermatology*. John Wiley & Sons.

Thomsen, S. F. (2014). Atopic Dermatitis: Natural History, Diagnosis, And Treatment. *International Scholarly Research Notices*, *2014*.

Weissenborn, M., Haefeli, W. E., Peters-Klimm, F., & Seidling, H. M. (2017). Interprofessional Communication Between Community Pharmacists And General Practitioners: A Qualitative Study. *International Journal Of Clinical Pharmacy*, *39*, 495–506.

Wong, I. T. Y., Tsuyuki, R. T., Cresswell-Melville, A., Doiron, P., & Drucker, A. M. (2017). Guidelines For The Management Of Atopic Dermatitis (Eczema) For Pharmacists. *Canadian Pharmacists Journal/Revue Des Pharmaciens Du Canada*, *150*(5), 285–297.