Dietary Modification to Improve Atopic Dermatitis in Adults

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Dietary Modification to improve Atopic Dermatitis in Adults

Introduction and Background

Identification of Potential or Actual Health Problem

Atopic dermatitis (AD) or atopic eczema is the most common chronic relapsing and recurring skin disease. It affects at least one in ten people in their lifetime (Frazier & Bhardwaj, 2020). Although it usually affects the pediatric population, it can progress to or even start during adulthood. According to the American Academy of Dermatology Association (AAD), one in ten Americans is diagnosed with AD. In developed countries, it was found to occur in two to ten percent of adults and has increased two to threefold in recent decades (Kolb & Ferrer-Bruker, 2021).

AD typically causes rash, redness, dry skin, and intense pruritis. In adults, it can present as mild to severe symptoms, more localized, thickened, lichenified, and excoriated, which indicates chronicity of the disease (Kolb & Ferrer-Bruker, 2021; AAD, n.d.). In adults, AD symptoms may also include thickened and darkened skin surrounding the eyes (AAD, n.d).

Patients with AD are likely to develop other skin and pulmonary inflammatory conditions such as allergic rhinitis and asthma. They are also at risk for complications such as Kaposi varicelliform eruption, bacterial, viral, or fungal infection, urticaria, sleep problems, anxiety, depression, and isolation, reducing their quality of life (Kolb & Ferrer-Bruker, 2021; Mayo Clinic, 2020). AD in adults is also linked to eye diseases such as inflamed cornea and change in cornea shape or keratoconus (AAD, n.d.)

The cause of AD remains unknown but is thought to be multifactorial, involving genetic, environmental, and immunological factors. Exacerbation or flares can be triggered by emotional or ecological factors such as cold, sweat, sweat, stress, and food hypersensitivity (Kolb & Ferrer-

Bruker, 2021; AAD, n.d.). Adults with AD typically seek primary care providers, such as Nurse Practitioners (NPs). Primary Care Providers are challenged with questions on what food best works for AD or if a particular food or diet causes AD.

Diet plays an essential role in dermatological conditions, including AD control (Vora et al., 2020). However, many misconceptions exist. Patients who suffer from AD tend to try an elimination diet due to the belief that certain foods cause AD flare-ups or exacerbation. Without the guidance of their healthcare providers, this leads to the unnecessary elimination of foods that may result in harm. Healthcare providers must judiciously recommend diet modification to prevent injury. This proposal for the health promotion project aims to provide individualized, evidence-based dietary change or recommendation plans for adults to help reduce AD flares and help improve quality of life, prevent complications, and improve overall patient outcomes.

Demographics

This health promotion project proposal is focused on adults aged 18 and above who have atopic dermatitis or atopic eczema. The onset of the disease can be from childhood persisting to adulthood, or onset adulthood regardless of race, ethnicity, or gender.

Coalition-Building and Partnership with the Community

This health promotion project is directed to NPs in primary care. It will be offered through the Nurse Practitioners Hawaii Continuing Education Course. If approved, the attendees will receive two continuing education (CE) contact hours after the course completion. A handout is also available for the attendees after the program completion. After the course completion, this health promotion project aims to have NPs utilize patient education to deliver holistic care in their practice.

Problem, Intervention, Comparison, Outcome

To effectively care for and manage adult patients with AD, nurse practitioners in the primary care setting are positioned to provide an individualized approach to managing AD. The focus should be on assessing each health condition to determine the best step to modify and recommend evidence-based dietary habits in addition to medical treatments. The NP can help plan with the patient and, at the same time, educate and guide the patient using evidence-based practices. This practice will help reduce the AD exacerbation or flares, duration, and severity, preventing complications and improving the quality of life. A combination of the medical treatment plans and a healthcare promotion plan that focuses on dietary modification should be done in the primary care setting.

Review of Literature

The primary therapy for AD is emollients for both flares and maintenance, and topical corticosteroids can be used as first-line treatment for atopic dermatitis flare-ups (Frazier & Bhardwaj, 2020). There are ongoing studies for AD treatment, including diet as adjuvant therapy. The following articles review the roles of dietary modification with AD.

The first study entitled “Dietary modifications in atopic dermatitis: patient-reported outcomes” was reported by Nosrati et al. (2017). (The researchers completed a cross-sectional survey to investigate patient perceptions and patient-reported outcomes regarding the role of diet in AD in the adult population. The researchers used a 61-question survey regarding dietary modifications, perceptions, and results. They distributed it to patients online via the nonprofit patient advocacy groups for patients with AD, the National Eczema Association, and the Eczema Society of Canada webpages, newsletters, and Facebook pages. The participants were adults with

AD who were 18 years and older. All participants answered 61 questions that focused on reducing or adding different food groups and changing their AD with these other food groups.

The mean age was 43; 77.4% were females. The predominant population was white, with a high level of education, and 70% lived in the US. Most of the participants lived in an urban setting (79.3%). The most common food the patients avoided was junk food (candy, pastries, chocolates, French fries, potato chips, sweets, dairy, and gluten (wheat, barley, rye). The majority reported improvement in their AD. Also, the patients said improvement in their skin condition when adding vegetables, organic foods, fruits, fish oil, and vitamin D supplements. Most of the patients in the study (93.5%) believe providers must discuss the role of diet in managing skin disease. However, only 32.5% consulted their dermatologists. The study concluded that potential nutritional benefits and risks need to be adequately discussed with the patients. Future research on patient-reported outcomes and more randomized control trials (RCTs) is necessary to assess best practices for diet in patients with AD (Nosrati et al., 2017).

The second study by Wang et al. (2018) is titled "Is the consumption of fast foods associated with asthma or allergic diseases?" This meta-analysis and systematic review that aimed to determine a correlation between fast foods consumption and asthma or allergic diseases showed that eating fast foods such as hamburgers is correlated with severe eczema. Based on Wang et al.'s findings, fast foods are linked to poor diet quality, obesity, overweight, and poorer health outcomes. The researchers mentioned that adopting westernized lifestyles, which includes the consumption of fast foods, has increased in recent decades, which may have caused the increase in the incidence of AD. They defined fast foods as preheated, precooked ingredients that are in a packaged form for takeaway. These foods generally have high calories, carbohydrates, additives, preservatives, and saturated fat. The researchers concluded that consumption of fast

foods significantly correlates with asthma, wheeze, allergic rhinitis, rhino-conjunctivitis, and eczema.

The review completed by Solomon et al. in 2018 and titled "The impact of lifestyle factors on evolutions of atopic dermatitis: an alternative approach" discussed that foods such as chocolate, cheese, yogurt, potato chips, glutinous rice cases, instant noodles, eggs, peanuts, seafood, shellfish, and milk cause irregular flares of AD skin lesions. One of the factors in the study was diet, and the researchers mentioned that avoiding ingestion of excess sweets, alcohol, coffee, juice, meats, fats, processed foods, and additives could help relieve AD. The researchers concluded that a diet consisting of the foods mentioned above might cause the worsening of AD or may have contributed to the cause in the increased incidence of AD. Similarly, in a cross-sectional study done by Li et al. (2021), titled "Processed Food and Atopic Dermatitis: A Pooled Analysis of Three Cross-Sectional Studies in Chinese Adults," the researchers evaluated the association of processed foods with AD in adults and concluded that processed food is correlated with AD in Chinese adults. The pooled analysis studied the three cross-sectional studies with a similar design and statistical model and clustered sampling by villages, institutions, or factories.

In the pooled analysis by Li et al. (2021), the first cross-sectional study population includes the automobile manufacturing workers from the Shiyan City of Hybei Province. They are participants of the Dongfeng-Tongji Cohort Study, the baseline data collected from the in-service workers since 2016. The second cross-sectional study participants were the rural residents from Huayuan, Shimen, Hengyang, and Zhuzhou cities or counties of Hunan province and the Human Rural Resident Chronic Disease Study participants in 2016. The third cross-sectional study participants were chosen through cluster sampling by institutions, participated in the Hunan Government Employee Health Study in 2017, and recruited civil servants in the urban

regions of Changsha city of Hunan province. In the pooled analysis of the three cross-sectional studies, all the participants received dermatological examinations performed by certified dermatologists. They answered a food frequency questionnaire survey, and spot urine samples were collected to estimate the daily sodium intake. There was a total of 15,062 participants who completed all evaluations. Those who consumed pickles and processed meats at least one to three times per week were significantly associated with AD. Notably, the researchers observed that sodium intake is positively associated with AD (Li et al., 2021).

Kim et al. (2017) found that consumption of 40g of kimchi lowers the presence of AD in Korean adults based on the Korean National Health and Nutrition Examination Survey survey, using a multistage, clustered, stratified, and rolling sampling method. There were 7,222 Korean adults 14-79 years of age who met the researcher's inclusion criteria. Kimchi is thought to be an ideal health food and is either fermented if aged for at least two days or nonfermented if aged less than two days. The researchers added that commonly used vegetables for fermented kimchi are napa cabbage, mustard leaf, diced radish, water radish, young summer radish, young radish, stuffed cucumber, green onion, and rapeseed leaf. For non-fermented kimchi, vegetables commonly used include fresh, water cucumber, cucumber, and perilla leaf kimchi. The researchers concluded that adequate kimchi consumption might have a protective effect against AD (Kim et al., 2017).

According to the American Academy of Dermatological Association, unguided dietary modification may do more harm than good, such as an elimination diet. Commonly eliminated foods that are perceived to cause AD flares are milk, eggs, wheat, soy, and nuts (AAD, n.d.). The two comprehensive studies, the first one titled “Role of Elimination Diets in Atopic Dermatitis-A Comprehensive Review” by Lim et al. (2017) and the second one titled “The Role of Diet

Modification in Atopic Dermatitis: Navigating the Complexity" by Rustad et al. (2021) support the AAD stance that there is not enough evidence to support that a strict diet elimination will prevent or improve AD in both adults and children. Lim et al.'s study in 2017 was done by conducting a PubMed search limited to the English language and included 43 articles that included the evaluation of one or more forms of dietary modification for the treatment of AD. Rustad et al.'s 2021 review of practice guidelines of the Joint Task Force comprised of the American College of Asthma, Allergy, and Immunology; the American Academy of Asthma, Allergy, and Immunology; and the Joint Council of Allergy, Asthma, and Immunology; the AAD; and RCTs on dietary choices to examine the role of diet in AD and the link of food allergy to AD. The researchers found that food avoidance is not generally supported in the management of most patients with AD. Specific diets such as the Six-Food Elimination Diet (the empirical elimination of milk, wheat, soy, eggs, peanut/ nuts, and fish/seafood), Autoimmune Protocol (AIP) diet, and supplements such as l-Histidine, Hempseed Oil, and vitamin E or D do not have enough evidence that they could have beneficial effects or applicability to AD. Interestingly, Rustad et al.'s 2021 review also concluded that having AD contributes to the development of food allergies rather than the opposite.

The reviewed studies show that incorporating diet modification in the management of AD in adults may help improve the chronic condition. However, the role of specific diets in AD is inconclusive and questionable. Some studies have a small sample size and lack generalizability and applicability to the whole population. At the same time, there is some evidence that supplementing foods and opting for a particular type of food such as kimchi (Kim et al., 2017) to improve AD remains a promising area for future research. More randomized controlled trials are needed to support and strengthen the existing evidence. Overall, the studies indicate that opting

for a balanced meal instead of instant, processed, or packaged food or food with additives helps improve AD and reduce flares. In summary, there is insufficient evidence to conclude that the strict avoidance of certain types of foods will improve or prevent AD in adult patients. In fact, some food avoidances may result in adverse outcomes.

Recommending a specific diet plan to AD patients remains challenging due to the heterogeneity of patients with AD and the pathogenesis of AD. Also, the dietary modification should be recommended as an adjuvant intervention for AD. For Nurse Practitioners (NPs) faced with the challenge of recommending a specific diet to a patient, evidence suggests that having a balanced, proper diet using locally sourced and accessible foods and avoiding processed and unhealthy food options will help improve AD and help reduce AD adverse outcomes.

Project Description Based on a Theoretical Framework

Identify the Need

In recent decades, there has been a rising AD, and diet has been attributed to AD (Kolb & Ferrer-Bruker, 2021; Vora et al., 2020). Although there are guidelines in AD management, there are no recommended dietary modifications to help manage AD (ADA, nd). AD negatively impacts a person's quality of life in physical, psychosocial, and mental functioning (Na et al., 2019). To treat patients holistically, NPs must use current evidence, including adjunct therapy, to manage and treat AD successfully. Using Nola Pender's Health Promotion Model can help design this health promotion plan to assist patients with modifying their diet to improve AD and ultimately improve their quality of life and overall health.

Propose Intervention Activities Address the Issue

Nola Pender's proposed nursing theory of the Health Promotion Model (HPM) encourages scholars to look at variables that have been shown to impact health behavior, which

can guide the development of health promotion through dietary modification and help improve AD (Petiprin 2020). HPM is a "complementary counterpart to models of health protection." The HPM theory emphasizes that the treatment is designed based on the patient's health behaviors, resulting in positive outcomes for their health and actions. It is directed at increasing a patient's level of well-being and realizing human health potential. The NPs in the primary care setting are positioned to help their patients recognize that they advocate for maintaining their health and well-being. To guide this health promotion project, Pender's HPM description of the multi-dimensional nature of persons as they interact with their environment to pursue health will be used. It focuses on three areas: 1) individual characteristics and experiences; 2) behaviors specific cognitions and affect; and 3) behavioral outcomes (Petiprin, 2020)

Adults typically seek treatment for their AD from their primary care providers (PCPs), including NPs. The PCPs can use the HPM strategies to promote health and address their patient's specific health behavior, guide the development of individualized dietary modification treatment plans, and use appropriate health promotion concepts for each patient. The health promotion project will assist NPs in helping each patient to perceive health threats by developing self-awareness and addressing barriers in health behavior modification, resulting in positive treatment outcomes in AD and improving quality of life.

Goals, Objectives, and Timeline of the Proposed Project

This health promotion project aims to guide NPs in developing individualized dietary modification plans for adult patients with AD to help improve AD and improve quality of life. The goals of the project are 1) The NPs will provide their adult patients with AD basic concepts regarding the skin condition; 2) The NPs will assist the patient in developing self-awareness in making changes to dietary habits associated with AD; 3) Guided by their NP, the developed plan

will assist each patient in building self-awareness by acknowledging the health benefits of making changes in dietary patterns associated with AD; 4) The NPs will encourage their adult patients with AD to address difficulties in changing unhealthy dietary habits; and 5) The NPs will report that at least half of the patients in the health promotion project will have improved AD through dietary modification. The timeline for this proposed project will be six months to a year to find relevant and appropriate resources for AD patients and time for dietary adjustments to be made.

Project Design

This health promotion project proposal aims to assist NPs in primary care develop individualized dietary modification plans for their adult patients with AD. During the assessment and planning phase of the project, the NPs would identify patients with AD who are willing to participate in the health promotion plan. The NPs may provide the data gathered in the study to show the importance of a positive dietary modification plan in the management of adult AD. There will be tools to be used to evaluate the program's effectiveness. One of the tools widely used to assess AD severity is the Patient-Oriented Eczema Scale (POEM) (University of Nottingham, n.d.) (see Appendix A). POEM is a valuable tool that focuses on the symptoms experienced by the patient. The tool was developed by the University of Nottingham and is free for clinicians. The university requests the user to email them how the user plans to use the scale to track its impact. It is available in paper format downloadable online (https://www.nottingham.ac.uk/research/groups/cebd/documents/methodological-resources/poem-for-self-completion.pdf) and is also available electronically on iOS and Android mobile devices.

Commented [CY1]: After reading below, I am confused. It seems that there are 2 projects here.
1.You are going to educate the NPs.
2.Ask the NPs to educate the patients and evaluate the changes in the patients' diets and AD after 3 months and again after 6 months?
You probably need to read this section over and make sure you are consistent with what you are doing.

Another newer self-assessment scale for adult patients with AD is the Patient-Oriented Scoring Atopic Dermatitis (PO-SCORAD) (Eczema Foundation, n.d., 2018) https://www.fondationeczema.org/sites/default/files/2021-01/2020_PO-SCORAD_EN.pdf). It was developed by the Eczema Foundation using a clinical score developed and validated by European Task Force on Atopic Dermatitis. PO-SCORAD is software available on iOS, Android, Mac, and Windows (see Appendix B). It is available in 24 languages, and it calculates the eczema severity score and monitors the disease progression through graphs. The software has illustrations for fair skin, dark skin, and Asian skin and helps diverse patients to recognize their symptoms (Eczema Foundation, 2018). The scores can be calculated weekly and sent to the provider. Patients can also share photos with their health care providers, which is helpful for AD management.

The clinician may opt to add the Dermatology Life Quality Index (DLQI) (see Appendix C) (Cardiff University, n.d.). The DLQI is a simple, easy-to-use, validated questionnaire initially published in 1994 by Professor A Y Finlay and Dr. G K Khan. The University of Cardiff in the United Kingdom currently owns the copyright of the questionnaire. It assesses adult patients' health-related quality of life suffering from skin diseases, such as AD, and can be used by adults 16 years and older. The questionnaire can be completed in two minutes, usually without assistance. The score is calculated by adding the score of each section, resulting from a minimum score of zero and a maximum score of 30. Scores greater than 10 indicate the severe quality of life impairment due to the skin disease. The updated 2019 version for use in the United States can be downloaded online (https://www.cardiff.ac.uk/__data/assets/file/0008/1344653/DLQI-USA-English-and-other-English-versions.zip). It is also available in 124 language translations, and an official mobile phone app is available for download.

Commented [CY2]: I like that you have 3 established tools in this project so that you can evaluate whether it made a difference. 😊

Please add these as 3 as appendices to your paper

A one-week diet recall will be done to assess the AD patient's dietary pattern. The NP will then help the patient explore the best tool to guide their diet. A number of tools are available. The *Start Simple with MyPlate* can be downloaded on smartphone apps (USDA Food & Nutrition Service, 2019). The *Start Simple with MyPlate* helps determine the patient's diet quality and if the diet aligns with the dietary guideline recommendations. Other nutritional guide apps available for download are *Calorie Counter & Food Diary by MyNetDiary, Nutrients, Shopwell, Calorie Counter & Diet Tracker by MyFitnessPal, MyPlate Calories Tracker, Fitocracy Macros, Carbs Control,* etc. (Kaiser Permanente, 2021). The nutritional guide apps offer a variety of features and allow patients to enter their health goals or use features within the app to plan their meals, help them have better food choices, and monitor their adherence. The mobile apps track the real-time progress of the patient, which can be shared with the provider.

The nutritional guide apps can range from free downloads to an annual subscription of forty dollars a month. Clinicians may recommend these apps depending on the patient's needs and preferences. Another approach that the NP can use to guide patient uses the "reflect, replace, and reinforce strategy by the CDC to help improve one's eating habits (CDC, 2021). The CDC suggests creating a list of eating and drinking habits and highlighting the cues for unhealthy habits. They also mentioned circling these cues that trigger unhealthy eating habits, reflecting, and replacing these habits. Finally, reinforcing healthy eating habits help in the long-term success of the plan, which can be measured by lesser or no circled cues. The CDC website offers an online, downloadable food and beverage diary for patients to use (see Appendix D). It is available to download online (https://www.cdc.gov/healthyweight/pdf/food_diary_cdc.pdf).

Commented [CY3]: I suggest that you add this to the appendix also. That way, everything is in one place.

After the NPs and their adult patients with AD decide which tool to use for the diet modification plan, the project's implementation phase begins. The patients may self-administer

the questionnaires (POEM or PO-SCORAD, and/or DLQI). Patients can share the results with their healthcare providers before or during their scheduled visits. The PCPs will track the AD improvement based on the patient's answers or scores to the questionnaires. The NP may guide patients in their dietary modification journey using nutritional food tracking apps or software or the written food diary.

The NPs must also be well-versed in food sources and assist the patients searching for alternative healthy foods by providing locally available community resources. The NPs must stay up-to-date with food sources or nutrition suggestions by following their professional associations, joining continuing education courses and events, and reading journals. The NPs must also continuously collect information needed to develop individualized dietary modification plans such as avoiding processed food, having a balanced diet, and incorporating education on available food choices or alternative foods that are locally sourced for easier access. The NP will also address patient behaviors that inhibit the patient from achieving dietary changes and assist the patient in changing this specific behavior. The NPs may also consider a referral to a dietician to collaborate on a plan for the patient's dietary modification.

Follow-up visits are scheduled to monitor health, reinforce knowledge and plans, confirm the patient's adherence to the plan, and verify follow-through on referrals with the dietician (Agency for Healthcare Research and Quality [AHRQ], 2015). The NPs can determine the appropriate frequency and schedule of the follow-up depending on the patient's progress and needs. Follow-ups can be done through phone calls, telehealth, or clinic visits. The data gathered will potentially help the NPs envision the benefits for AD patients and distinguish potential barriers in the project and address these barriers. This project requires an ongoing evaluation of

the plan, and the NPs can make changes as they deem appropriate based on their patient's specific needs.

Available Community Assets and Resources

There are several community resources to help with the proposed health promotion project. The clinical providers may collaborate with a community or hospital dietician to guide their AD patients' diet modification. There are also available local food and nutrition information centers and outpatient nutrition services. In 2020, the U.S. Department of Agriculture and the U.S. Department of Health and Human Services published the *Dietary Guidelines for Americans, 2020-2025*, available to download online (https://www.dietaryguidelines.gov/sites/default/files/2021-03/Dietary_Guidelines_for_Americans-2020-2025.pdf). A hard copy version is available to purchase from the U.S. Government bookstore (U.S. Department of Agriculture and U.S. Department of Health and Human Services. [USDA], n.d.) A local resource for diet guidance called the *Pacific-based Dietary Guide,* developed by the Secretariat of the Pacific Community Public Health Division. It is a dietary guideline that reflects the practices of the Pacific Island people. The Pacific-based-dietary guidelines provide options for locally available foods in Hawaii or other Pacific Islands for easier access and information for the local patients. It is also available online for download at (http://pressbooks-dev.oer.hawaii.edu/humannutrition/chapter/pacific-based-dietary-guidelines/).

Roles of All Stakeholders and Participants in Intervention Strategies

The participants in the intervention are the NPs working in primary care. The NPs in primary care should create plans to incorporate dietary modification to improve AD in adult patients. NPs, in collaboration with dieticians, can formulate a plan of care to start the dietary

change to help adult patients with AD. Hopefully, the patients will form a partnership with their primary care NPs, serve as a source of clinical data, and gain knowledge and improved AD symptoms from this health promotion project.

Potential Barriers in the Development and Resolution of the Health Issue

There are potential barriers to diet modification in adults with AD in developing and resolving the health issue. The first potential barrier to achieving dietary changes is that patients may be resistant to changes. Also, the patients may not see an immediate or significant improvement of their symptoms within the specified timeframe, resulting in withdrawal from the project or discontinuation of their dietary modification program. Patients are asked to answer self-administered questionnaires and track their nutrition which is at risk of bias. Another potential barrier is the providers' lack of adequate training with healthy diet recommendations and the accuracy of assessing AD improvement due to its variable symptom presentations in adults. Also, the software or smartphone apps and questionnaires that the clinicians and adult AD patients plan to use have pros and cons and may not be practical and applicable for some AD patients. The barriers mentioned need to be addressed by providing continuing education to clinical providers about a healthy diet and management of AD. It is essential to use community resources and incorporate multidisciplinary teams, such as dieticians and dermatologists, to help manage AD.

The FNP Role in Plans for Implementation of the Project

The roles of the NP in this proposed health promotion project are educator and facilitator. The NP will provide the patient with current evidence-based knowledge regarding dietary modification to aid in changing diet habits. Also, the NPs will develop appropriate dietary modification plans tailored to the patient’s specific nutritional guidance needs and provide

recommendations based on the data gathered from the patient's response to the questionnaires. Furthermore, the NP will perform an ongoing evaluation of the plan's efficacy and perform appropriate changes required to complete the project. They should also conduct assessments during the patient's initial and subsequent visits, taking note of the patients' symptoms and disease presentation and progression, and adjusting the pharmaceutical treatment within the scope of practice and experience of the primary care NP. In addition, the NP may wish to seek consultation as appropriate for refractory or severe AD symptoms.

Evaluation

Evaluation Plan to Assess the Impact of the Proposed Project

The evaluation plan is essential to assess the impact of the proposed project. A detailed and measurable evaluation is required for NPs to be able to advise patients regarding dietary modifications to improve AD, prevent complications associated with the chronic disease, and ultimately improve the overall quality of life. This health promotion project is directed toward the NPs in primary care and will be offered through a continuing education program. A post-program evaluation survey will be conducted and designed following the Organization for Economic Co-operation and Development - Development Assistance Committee Network on Development Evaluation (OECD-DAC) criteria (Organization for Economic Co-operation and Development [OECD], n.d.). These criteria are relevance, coherence, effectiveness, efficiency, impact, and sustainability, which would provide a framework to assess the proposed interventions' worth.

The data gathered from the POEM, PO-SCORAD, and/or DLQI scores, nutritional food apps, or adherence to the diet plan determined by achieving desired goals is essential to measure the project's success. Aside from the data gathered, patients attending their scheduled follow-ups

and participating in their diet modification plan can also be used to measure the health promotion project's success. Once the NP is adept at providing dietary guidance interventions, it is necessary to have follow-ups with the patients to reevaluate their symptoms, determine if the plan is valid, identify gaps, and initiate possible plan adjustments. Also, the NP must address the perceived barriers to ensure the project remains efficient, applicable, and practical.

Evaluation Strategies Regarding the Impact of all Participants in the Project

The evaluation plan has crucial points to measure the efficacy of the proposed health promotion project. The first critical point is that at least half of the participants will have improved AD through dietary modification treatment plans. The second crucial point is that at least half of the project participants will report a reduction in AD flares that require a step-up in the usual AD regimen, such as adding a secondary pharmaceutical treatment to control the symptoms.

The evaluation methods used include taking post- POEM or PO-SCORAD and DLQI scores during the subsequent visits. For example, an improvement in the POEM, PO-SCORAD, and/or DLQI scores results with each visit, and achieving nutritional goals measured using smartphone apps or lesser identified cues in the food diary by the CDC suggests that the project is successful. In that case, it indicates an improvement in symptoms and the patient's quality of life and demonstrates that the health promotion effort is helpful for the patient. On the subsequent visits, the NP will interview the patients. The data gathered will identify and evaluate dietary modification factors and tailor them to specific patient needs for guidance to improve AD.

Areas for future research

The area for future research to support this project is to address the potential barriers and limitations of the project. One identified limitation is the high risk of bias when reporting symptoms to the provider through self-administered questionnaires such as POEM, PO-SCORAD, and DLQI and reporting adherence to the diet modification plan. Patients may also find the questionnaires repetitive since similar questionnaires will be administered. Future researchers may search for alternative tools to guide the patient in their diet modification journey to improve patients' treatment and management of AD, such as avoidance of triggers and pharmaceutical interventions, which were not classified in this health promotion project. Also, future researchers may compare each established tool and whether it made a difference. Future researchers must also consider that AD is known for its heterogeneity and may present differently in a diverse population.

Some specific diet, such as a particular type of food or diet that helps in AD, has promising results but is limited due to the small sample size and requires more substantial evidence, such as RCTs. A small sample size reduces the study's applicability and generalizability of findings to the whole population. Specific guidelines for a diet to help adult patients with AD will require more well-designed studies for more support.

Summary

Diet remains related to the symptoms and severity of AD; however, it is more intricate than it may seem. Although there is still a lack of evidence on the best specific type of diet to help with AD, the literature supports that having a healthy and complete diet improves AD. As patients have increasingly become more health-conscious and learn that adapting to a healthy diet can produce positive health outcomes, they start to seek guidance from their PCPs, including NPs.

Reviewing the literature and integrating the theoretical framework by Nola Pender provided a viewpoint on the proposed health promotion project. Primary Care Providers, such as NPs, should treat the patients holistically and focus treatment and patient education based on the patient's needs. By promoting a healthy diet behavior modification constructed on Nola Pender's Health Promotion Model, NPs can help improve atopic dermatitis in adults. This improves health care outcomes, reduces morbidity, and ultimately improves the patient's overall quality of life.

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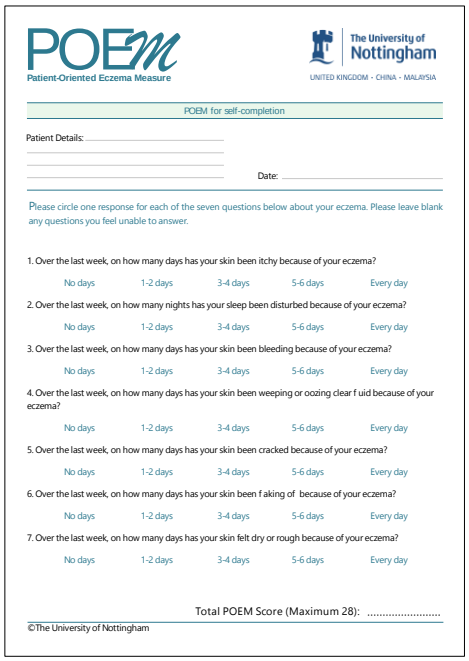
Appendices

Appendix A: POEM



POEM
Patient-Oriented Eczema Measure

The University of Nottingham
UNITED KINGDOM • CHINA • MALAYSIA

POEM for self-completion

Patient Details: .....

Date: .....

Please circle one response for each of the seven questions below about your eczema. Please leave blank any questions you feel unable to answer.

1. Over the last week, on how many days has your skin been itchy because of your eczema?

No days 1-2 days 3-4 days 5-6 days Every day

2. Over the last week, on how many nights has your sleep been disturbed because of your eczema?

No days 1-2 days 3-4 days 5-6 days Every day

3. Over the last week, on how many days has your skin been bleeding because of your eczema?

No days 1-2 days 3-4 days 5-6 days Every day

4. Over the last week, on how many days has your skin been weeping or oozing clear f uid because of your eczema?

No days 1-2 days 3-4 days 5-6 days Every day

5. Over the last week, on how many days has your skin been cracked because of your eczema?

No days 1-2 days 3-4 days 5-6 days Every day

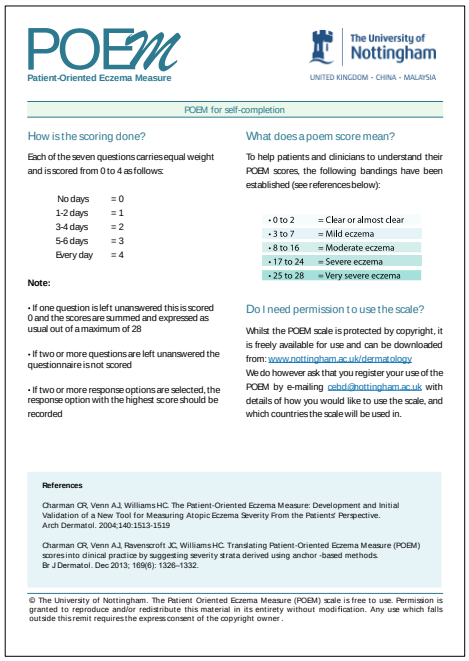
6. Over the last week, on how many days has your skin been f aking of because of your eczema?

No days 1-2 days 3-4 days 5-6 days Every day

7. Over the last week, on how many days has your skin felt dry or rough because of your eczema?

No days 1-2 days 3-4 days 5-6 days Every day

Total POEM Score (Maximum 28): .....



POEM
Patient-Oriented Eczema Measure

The University of Nottingham
UNITED KINGDOM • CHINA • MALAYSIA

POEM for self-completion

How is the scoring done?

Each of the seven questions carries equal weight and is scored from 0 to 4 as follows:

No days	= 0
1-2 days	= 1
3-4 days	= 2
5-6 days	= 3
Every day	= 4

Note:

• If one question is left unanswered this is scored 0 and the scores are summed and expressed as usual out of a maximum of 28

• If two or more questions are left unanswered the questionnaire is not scored

• If two or more response options are selected, the response option with the highest score should be recorded

What does a poem score mean?

To help patients and clinicians to understand their POEM scores, the following bandings have been established (see references below):

• 0 to 2	= Clear or almost clear
• 3 to 7	= Mild eczema
• 8 to 16	= Moderate eczema
• 17 to 24	= Severe eczema
• 25 to 28	= Very severe eczema

Do I need permission t o use the scale?

Whilst the POEM scale is protected by copyright, it is freely available for use and can be downloaded from: www.nottingham.ac.uk/dermatology
We do however ask that you register your use of the POEM by e-mailing cebd@nottingham.ac.uk with details of how you would like to use the scale, and which countries the scale will be used in.

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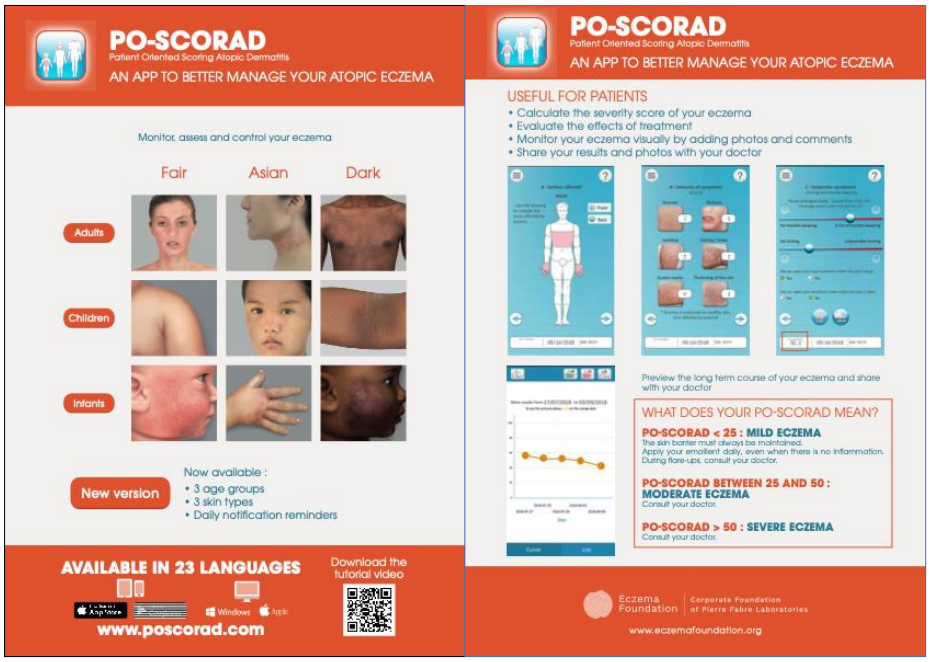
Appendix B: PO -SCORAD



Appendix C: DLQI

DERMATOLOGY LIFE QUALITY INDEX **DLQI**

Hospital No: Date: Score:

Name: Diagnosis:

Address:

The aim of this questionnaire is to measure how much your skin problem has affected your life OVER THE LAST WEEK. Please check one box for each question.

1.	Over the last week, how **itchy**, **sore**, **painful** or **stinging** has your skin been?	Very much A lot A little Not at all	☐ ☐ ☐ ☐	
2.	Over the last week, how **embarrassed** or **self conscious** have you been because of your skin?	Very much A lot A little Not at all	☐ ☐ ☐ ☐	
3.	Over the last week, how much has your skin interfered with you going **shopping** or looking after your **home** or **yard?**	Very much A lot A little Not at all	☐ ☐ ☐ ☐	Not relevant ☐
4.	Over the last week, how much has your skin influenced the **clothes** you wear?	Very much A lot A little Not at all	☐ ☐ ☐ ☐	Not relevant ☐
5.	Over the last week, how much has your skin affected any **social** or **leisure** activities?	Very much A lot A little Not at all	☐ ☐ ☐ ☐	Not relevant ☐
6.	Over the last week, how much has your skin made it difficult for you to do any **sport**?	Very much A lot A little Not at all	☐ ☐ ☐ ☐	Not relevant ☐
7.	Over the last week, has your skin prevented you from **working** or **studying**?	yes no	☐ ☐	Not relevant ☐
	If "No", over the last week how much has your skin been a problem at **work** or **studying**?	A lot A little Not at all	☐ ☐ ☐	
8.	Over the last week, how much has your skin created problems with your **partner** or any of your **close friends** or **relatives**?	Very much A lot A little Not at all	☐ ☐ ☐ ☐	Not relevant ☐
9.	Over the last week, how much has your skin caused any **sexual difficulties**?	Very much A lot A little Not at all	☐ ☐ ☐ ☐	Not relevant ☐
10.	Over the last week, how much of a problem has the **treatment** for your skin been, for example by making your home messy, or by taking up time?	Very much A lot A little Not at all	☐ ☐ ☐ ☐	Not relevant ☐

Please check you have answered EVERY question. Thank you.

Appendix D: My Food Diary – CDC

My Food and Beverage Diary

Date: _____

Monday	
Breakfast	
Snack	
Lunch	
Snack	
Dinner	
Snack	

Tuesday	
Breakfast	
Snack	
Lunch	
Snack	
Dinner	
Snack	

Wednesday	
Breakfast	
Snack	
Lunch	
Snack	
Dinner	
Snack	

Thursday	
Breakfast	
Snack	
Lunch	
Snack	
Dinner	
Snack	

Friday	
Breakfast	
Snack	
Lunch	
Snack	
Dinner	
Snack	

Saturday	
Breakfast	
Snack	
Lunch	
Snack	
Dinner	
Snack	

Sunday	
Breakfast	
Snack	
Lunch	
Snack	
Dinner	
Snack	

Notes:

Learn more at https://www.cdc.gov/healthyweight/losing_weight/eating_habits.html

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