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Knowledge Awareness of Body Image Impairment and Its Associated Mental Health Risk Factors in Pediatric Patients with Atopic Dermatitis Among Healthcare Providers in an Outpatient Allergy and Immunology Clinic in Miami, Florida: A Quality Improvement Project

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Knowledge Awareness of Body Image Impairment and Its Associated Mental Health Risk Factors in Pediatric Patients with Atopic Dermatitis Among Healthcare Providers in an Outpatient Allergy and Immunology Clinic in Miami, Florida: A Quality Improvement Project

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Abstract

Atopic dermatitis is one of the most common skin conditions prevalent in the pediatric population. Pediatric patients with atopic conditions like atopic dermatitis are more susceptible to mental health disorders when compared to their healthy counterparts, however, despite associations between dermatological conditions and mental health disorders, screening for mental health risk factors and disorders among these patients is still lacking. In efforts of bridging this gap, purpose and focus of this quality improvement project was to increase healthcare provider's knowledge awareness of body image impairment and its associated mental health risk factors in pediatric patients with atopic dermatitis after implementing an educational intervention. A cross-sectional investigation was conducted using a pre- and posttest study design. A convenience sampling method was used to recruit a total of five participants at an outpatient allergy and immunology clinic in Miami, Florida. The project was conducted remotely, including the delivery of the educational intervention and the administration of the pre- and posttests of a modified version of the Body Dysmorphic Disorder Questionnaire–Dermatology Version (BDDQ-DV) that measured knowledge awareness of body image impairment and associated mental health risk factors in pediatric patients with atopic dermatitis. Results revealed no significant large difference between pretest and posttest mean scores after the educational intervention was implemented $t(4)= -2.18$, with a $p = 0.095$, ($p > 0.05$). Healthcare providers should receive training in this area to improve access to mental healthcare and health outcomes among this vulnerable population.

Keywords: atopic dermatitis, body image, mental health, children and adolescents, healthcare providers

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

DNP PROJECT REPORT

Introduction

Atopy refers to a predisposition of immune response against antigens and allergens; this response manifests in a manner in which individuals with atopic conditions are highly propense to hypersensitivity reactions. Common manifestations of atopy include allergic bronchial asthma, allergic rhinitis, atopic dermatitis, food allergies, psoriasis, allergic conjunctivitis, IgE-mediated drug allergies, urticaria, and angioedema (Justiz Vaillant et al., 2022). While atopic conditions are known to place a physical burden on patients, they are also highly associated with psychosocial mental health risk factors that affect quality of life and healthcare outcomes. Atopic conditions like atopic dermatitis, allergic rhinitis, and psoriasis have been linked to mental health illnesses and risk factors such as anxiety, depression, attention deficit hyperactivity disorder (ADHD), conduct disorder, substance use disorder, body image impairment, poor self-esteem, suicidal ideation, and suicide completion (Gilaberte et al., 2020; Hedemann et al., 2022; Na et al., 2019; Oh et al., 2018).

Atopic dermatitis (AD) is one of the most common skin conditions in the pediatric population. Patients with atopic dermatitis commonly experience pruritus (itching) that worsens at night, scratching and rubbing of the skin which can cause the skin to flare, dry and scaling of the skin, presence of active skin lesions with prurigo and erythema, lesions that are thickened and lichenified, and exacerbation, which can be caused by irritants (like wool) or ingestion of allergenic food (Justiz Vaillant et al., 2022; Na et al., 2019). While atopy typically originates in early childhood; a phase of life where the individual is undergoing critical physical and psychological development, it can also persist into adulthood (Xie et al., 2019). As a result, it is reasonable to consider the link

between atopic conditions and the reduction of quality of life, and in turn, and increased need for healthcare services. Moreover, both mental health disorders and skin diseases are in the top 20 conditions with the highest personal healthcare costs for children and adolescents in developed countries (Xie et al., 2019). This ushers the need for healthcare providers to assume responsibility of considering the psychological effects that atopic conditions such can have on their patients.

As previously mentioned, atopic dermatitis is the most common inflammatory skin disease and affects up to 15-20% of the pediatric population, and approximately 10% of the adult population (Justiz Vaillant et al., 2022; Kern et al., 2021). Studies have found that 25% of children and adolescents who are affected by atopic dermatitis may go on to experience this disorder in adulthood as either a continuous presentation, or a relapse of symptoms (Hadi et al., 2021). Additionally, patients who have an increased level of IgE and a genetic predisposition for atopic dermatitis are at risk of developing the "atopic march," which refers to the tendency to develop subsequent atopic comorbidities such as allergic rhinitis, asthma, and allergies later in life (Ghamrawi et al., 2020). The majority of individuals (80%) with atopic conditions like atopic dermatitis are known to have a family history of allergy, therefore suggesting a genetic susceptibility of atopic conditions (Justiz Vaillant et al., 2022). Moreover, studies have found that patients with atopic dermatitis experience increased somatic suffering, psychological disturbance, and are at a higher risk of mental health disorders when compared to healthy counterparts who do not have a diagnosis of atopic dermatitis (Xie et al., 2019). Researchers agree that in order to both prevent the exacerbation of symptoms and promote an improvement of quality of life among these patients, healthcare providers must be aware of these patient's needs,

and take action to deliver the appropriate health care to this population in the form of integrated, holistic, and multidisciplinary care (Hadi et al., 2021; Xie et al., 2019).

Despite existing literature investigations relating to the topic of atopic dermatitis and mental health risk factors, trends of mental disorders in children and adolescents with atopic dermatitis are not yet clear. Literature reveals existing knowledge gaps that must be addressed to fully quantify the effects of this atopic condition and its associated mental health risk factors. It can be said that if the psychosocial aspect of healthcare is neglected or continues to go unaddressed among this vulnerable population, it may manifest in a variety of ways, including the potentiation of mental health risk factors and disorders in childhood and beyond. The risk of not addressing the link between mental health risk factors among pediatric and adolescent patients with atopic dermatitis poses a threat to their quality of life, including the development of mood disorders, negative perception of self, social isolation, suicidal ideation, and actions that lead to suicide completion (Gilaberte et al., 2020; Hinkley et al., 2020; Long et al., 2022; Patel et al., 2019; Xie at al., 2019). Given that providers are at the forefront of healthcare delivery, it is crucial to assess their existing knowledge base and awareness of mental health risk factors associated with atopic dermatitis, and work to expand the existing foundation if investigations reveal a deficiency. The current landscape of this topic suggests a scarcity of research that specifically addresses the healthcare providers knowledge awareness surrounding the intersection of mental health risk factors and atopic dermatitis in pediatric and adolescent patients. Thus, this proposed study aimed to fill existing gaps by increasing knowledge awareness of body image impairment and its associated mental

health risk factors in pediatric patients with atopic dermatitis among healthcare providers in an outpatient allergy and immunology clinic in Miami, Florida.

Problem Statement

Atopic dermatitis affects over 9.6 million (15-20%) individuals under the age of 18 in the United States (Ständer, 2021). Past studies have suggested the presence of psychological and social impairment within this vulnerable population, as well as its association with impaired quality of life resulting from a variety of factors. Among these factors is impaired body image, which can manifest due to the atopic condition's visible appearance (Costeris et al., 2021). Conditions that are physically visible such as atopic dermatitis can affect the way patients perceive their body, as well as how they believe others perceive them. The impairment of body image among this population can lead to a host of other disturbances including anxiety, poor self-esteem, teasing/bullying, embarrassment, social isolation, concerns about exacerbation, decreased or poor performance in school, sports, and other leisure activities (Costeris et al., 2021; Hammer-Helmich et al., 2016; Ražnatović Đurović et al., 2019). Literature maintains that if unaddressed, poor body image can not only affect the individual's physical health, but their psychological health as well; negatively impacting their self-esteem, competence, mood (development of negative emotions like depression and isolation), and social and occupational functioning (Hosseini & Padhy, 2022). It is therefore necessary to increase awareness of body image impairment and its associated mental health risk factors among the pediatric and adolescent population with atopic dermatitis to improve their health outcomes and quality of life. The purpose of this quality improvement project was to increase knowledge awareness of body image impairment and its associated mental

health risk factors in the pediatric population with atopic dermatitis among healthcare providers in an outpatient allergy and immunology clinic in Miami, Florida.

Advanced Literature Review

The purpose of this quality improvement project was to increase knowledge awareness of body image impairment and its associated mental health risk factors in the pediatric population with atopic dermatitis among healthcare providers in Miami, Florida. A literature review was conducted to identify gaps in the literature as it relates to the research problem by utilizing Florida International University's Libraries' comprehensive database advanced search. Key search terms included: "atopic dermatitis," "mental health," "psychiatric," "body image," "screening," "children and adolescent," "youth," and "healthcare providers." The search was limited to literature published within the last five years (from 2018-2023), of which only full-text English articles were selected for inclusion. Research articles with relevant topics, such mental health risk factors associated with atopic dermatitis, healthcare providers' knowledge on mental health risk factors in patients with atopic dermatitis, and mental health screening for patients with atopic conditions were included. Of the articles resulted, sixteen were found that appropriately addressed the population of interest, purpose of the quality improvement project, and the PICO clinical question. Based on these articles, knowledge gaps were revealed, and the following three content areas were identified: (a) association between atopic and mental health conditions, (b) lack of mental health screening in patients with atopic conditions, and (c) healthcare provider's knowledge deficits of mental health risk factors in pediatric patients.

Studies Examining Associations Between Atopic and Mental Health Conditions

This content area analyzes the link between mental health conditions among individuals with atopic skin conditions. Included in this section are eight studies that were selected due to their relevance in relation to the chosen topic of this project. The analysis of these studies will be discussed in chronological order by year.

Patel et al. (2019) conducted a systematic review and meta-analysis of the literature to examine the complex relationship between atopic dermatitis (AD) and depression. Investigators searched eight databases for related articles published up to March 2018 in print, press, or online form. Articles from any language were included in this systematic review. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guideline was used to assess the quality of the articles; finally, a total of 106 observational studies which addressed the relationship between atopic dermatitis, depression and/or suicidality. Researchers used a variety of data analysis methods including The Newcastle-Ottowa Scale (NOS), prevalence, odd ratios, and 95% confidence intervals, and Egger regression and Begg rank correlation. Results of the systematic review revealed a higher prevalence of any depression among individuals with AD, when compared to their healthy counterparts. Similar results were found in sensitivity analyses of studies which assessed clinical depression, depressive symptoms, and adults with studies that included health controls. Ultimately, researchers found that AD is associated with significantly higher depression scale scores, parental depression, antidepressant use, and suicidality. Patel et al. (2019) determined the need that future longitudinal studies continue to assess the complex relationship between atopic dermatitis

and depression, the mechanisms of depression and suicidality, and ideal methods to prevent and treat these risk factors.

Xie at al. (2019) conducted a systematic review of the literature to (a) assess the risk of mental disorders in children and adolescents with or without atopic dermatitis, and (b) explore related cofounders. The investigators searched for literature across eight databases that were believed to most likely contain papers appropriate for the review. Researchers conducted their review in accordance with the PRISMA guideline, with dates ranging from inception (1806) to September 2018, identifying studies that focused on children and adolescents aged 18 years old or younger with and/or without prevalence of mental disorders and atopic dermatitis. The inclusion of articles for this systematic review was limited to literature published in the English language, which were peer-reviewed and were of an experimental or observational design; these studies should target the child and adolescent population, assess mental disorders categorized by the Diagnostic Statistical Manual of Mental Disorders (fifth edition), assess outcome domains such as mental health problems or psychiatric disorders, compare the prevalence and/or incidence of mental disorders between child and adolescents with/without AD, and apply quantitative methods, report effect sizes or data that can be utilized to determine effect sizes. Researchers used multiple forms of data analysis such as NOS, Comprehensive Meta-Analysis software, random-effects models, crude odds ratios, 95% confidence intervals, the Q statistic, and the I-squared value. Xie et al. (2019) successfully identified thirty-seven studies which were included, thirty-five of which found that children and adolescents with atopic dermatitis had a significantly higher risk of total mental disorders than their healthy counterparts. Given the results from this

systematic review, investigators urge the importance of integrated, holistic, multidisciplinary management of pediatric atopic dermatitis, with emphasis on the well-being of the individual.

Guo et al. (2020) set out to investigate (a) the incidence of skin diseases, (b) factors that affect the patient's quality of life, anxiety, and depression among patients with skin conditions, and (c) the interaction between the triad by utilizing a descriptive cross-sectional research design. Researchers collected data from 1127 outpatient and inpatient settings throughout 12 hospitals in the North and East regions in Xinjiang, China from March to June 2018. Participants completed a various questionnaires made available online, through which survey respondents were determined by cluster sampling. Statistical analysis was performed and interpreted using SAS JMP10.0; of which quantitative data was expressed as the mean +/- standard deviation, and groups were compared using one-way analysis of variance (ANOVA). Furthermore, qualitative date was examined using thematic analysis, while the chi-squared test was utilized to analyze quantitative data. Other methods of data analysis included logistical regression, and the spearman rank correlation. Study results indicate that quality of life index in patients with psoriasis, atopic dermatitis, acne, steroid-dependent dermatitis, and alopecia was statistically significant. Moreover, factors that were found to affect quality of life included age, family history and the type of skin disease, while factors that affected anxiety included sex, marital status, education, and family history. Ultimately, the spearman rank correlation analysis reflected a positive correlation between quality of life, anxiety, and depression. Researchers hold that given study results, there is evidence to

suggest the recommendation of exploring clinical psychotherapy of anxiety and depression among patients with skin conditions.

Hinkley et al. (2020) carried out an analytical cross-sectional study to investigate (a) the link of cutaneous body image (CBI) as a mediator of the relationship between having a skin condition and mental health conditions such as anxiety and depression, and (b) to further validate CBI as a construct. The study obtained its data utilizing a convenience sample, of which a total of 256 participants were studied: 128 participants were diagnosed by a dermatologist with psoriasis, atopic dermatitis, or acne and were taking a systemic medication, while the remaining 128 comparison participants did not have a diagnosed skin condition. Data was statistically analyzed by using regression analysis. Convergent and discriminant validity were examined using correlations, and the potential of a CBI mediated relationship with anxiety and depression was examined using the bootstrapping procedure on PROCESS macro to test for moderated mediation. Research findings indicate that CBI was more negative in patients with skin conditions, when compared to their healthy counterparts, and CBI was also significantly correlated with appearance-related self-esteem. CBI, however, was not significantly related to drive for thinness or dietary restraint. Finally, it was confirmed that CBI was indeed related to the relationship between a dermatologic condition and anxiety, and depression. Given these findings, researchers recommend and implore dermatologists to be aware of the impact that dermatoses may have on an individual's mental health, particularly their cutaneous body image.

Mavrogiorgou et al. (2020) conducted a descriptive-exploratory retrospective study to examine the interaction of dermatological comorbidities in patients with a

primary mental health disorder. Researchers utilized purposive sampling to identify a total of 5,071 psychiatric patients hospitalized at the Department of Psychiatry between 1984 and 2006, who also had a skin disease. Of these patients, a total of 86 individuals met the criteria for inclusion. A second sample of 12,014 patients were identified using electronic medical records during the period of 2007-2015, 126 of which met the inclusion criteria of a psychiatric condition and skin disease. In total, 212 comorbid patients were analyzed and separated into eight groups based on dermatological diagnosis. Researchers utilized IBM SPSS Statistics for Windows to conduct their analysis and utilized parametric or non-parametric tests, and descriptive statistics such as mean values, standard deviation, and range. Results indicate that the proportion of patients with primary mental disorders and additional dermatological disease was 1.24%, with psoriasis and atopic dermatitis accounting for the most frequent dermatological diseases amongst the cohort, with 35.4% and 22.6% respectively. Moreover, the most common mental disorder present among these patients was depressive illness, which was seen in 42.5% of the analyzed population. Researchers conclude that their results indicate the association of depression with psoriasis and atopic dermatitis, thereby recommending the need for early detection and treatment of comorbid patients, and imploring that further studies investigate the pathogenic mechanisms and relevant therapies that can be implemented to treat patients who fall under this given category.

Yew et al. (2020) carried out an analytical cross-sectional study to investigate the psychosocial burden of skin disorders among a general multi-racial population cohort in Singapore, with the intention of increasing awareness regarding the necessity of holistic management for patients with skin disorders. Researchers measured outcomes such as

depression, social isolation, loneliness, and health rated quality of life using the Patient Health Questionnaire (PHQ-9), the Lubben Social Network Scale-6 (LSNS-6), the University of California (UCLA) Loneliness Scale, and the European Quality of Life-5 Dimensions-5 Level (EQ-5D-5L). The study obtained its data from a representative sample of a community-dwelling adult population in the central region of Singapore, in which a total of 1,510 participants completed a first year follow up survey of the Population Health Survey, between November 2016 and February 2018. Statistical analysis was conducted, and associations were assessed using chi-squared tests, independent-samples t-tests, or one way analysis of variance (ANOVA). The results of the study revealed that participants with skin diseases reported significantly higher PHQ-9 and UCLA Loneliness scale scores, and lower LSNS-6 and Eq-5D-5L scores in comparison to their healthy counterparts. Additionally, the presence of skin disease was positively associated with depressive symptoms and negatively associated with quality of life. To reduce the burden of skin disorders, Yew et al. (2020) recommended placing a greater emphasis on the psychosocial aspect of care among these patients and monitoring patients for mood-related changes and implementing early psychosocial interventions, which can also work to reduce the burden of psychosocial risk factors among this population.

Costeris et al. (2021) set out to investigate (a) how dermatological disorders may influence and individual's self-esteem, and (b) perceived social support in two groups of patients (those with severe visible facial acne, and those with non-visible psoriasis and eczema) by utilizing an observational study design. Researchers collected data from a total of 162 participants aged 18-35 years old utilizing a snowball sampling method.

Participants were separated into three different groups: Group A, which was comprised of 54 participants with severe visible facial acne, Group B which also had 54 participants who were diagnosed with psoriasis/eczema, and finally, Group C, which was made up of an additional 54 individuals with no identifiable skin disorder. Data was analyzed and processed by using the Kolmogorov-Smirnov test, ANOVA, mixed ANOVA, multivariate analysis of covariance (MANCOVA), and the Bonferroni correction with $p < .001$. Study results indicate that all dermatological patients studied showed lower self-esteem and lower perceived social support in comparison to the control group, however, those with facial acne appeared to have lower self-esteem and perceived social support when compared to the other two groups. Considering the role that self-esteem and perceived support can pose on individuals with skin disorders, researchers recommend that patients be evaluated both prior to and after dermatological intervention to assess and monitor individual self-esteem and social support.

Muzzolon et al. (2021) performed a cross-sectional prospective study to assess the application of a risk assessment instrument for mood disorders in pediatric patients with atopic dermatitis, in comparison to their healthy siblings. Researchers implemented a non-probabilistic, convenience and systematic sample to select participants. The sample population of individuals who met inclusion criteria consisted of 150 pediatric patients, who were evaluated using Child Behaviour Checklist (CBCL), of which two versions exist; one for 18 months-5 years of age (n=59), and a second, which is appropriate for children aged 6-18 years (n=91). Data was analyzed using the Wilcoxon-Mann Whitney test, Pearson's chi-squared test with Yates correlation and Fisher's exact test, with a significance level of 5%. According to study results, the risk of a mood disorder in

participants with atopic dermatitis was 63% and in healthy siblings was 36%. In addition, there was a higher risk of sleep problems, thought problems, and somatic complaints in patients with atopic dermatitis versus their healthy siblings. Parental concerns regarding socialization/bullying were also more frequent regarding their child(ren) with atopic dermatitis in comparison to their sibling counterparts. Moving forward, researchers implore that longitudinal studies verify the persistence of symptoms and conditions that are associated with their intensification over time. Additionally, it is recommended that healthcare teams implement the use of screening tools in practice, to appropriately assess, treat, and prevent mental healthcare problems.

The findings of the research articles included in this content area demonstrate the increased prevalence and incidence of mental health disorders in individuals with skin conditions including atopic dermatitis, psoriasis, and acne. As demonstrated by Patel et al. (2019), individuals with atopic dermatitis are more propense to report higher depression scale scores, antidepressant use, and suicidality, which is also confirmed by Mavrogiorgou et al. (2020), who found a significant association of dermatological disease and mental disorders, particularly depressive illness. Xie et al. (2019) found that children and adolescents with atopic dermatitis are at a significantly higher risk of total mental health disorders than their healthy counterparts, which is further ascertained by Muzzolon et al. (2021), who established the risk of mood disorders in children with atopic dermatitis when compared to their healthy siblings. According to Guo et al (2020), quality of life index in patients with psoriasis, atopic dermatitis, acne, and alopecia is statistically significant, and reflect a positive correlation between skin conditions, alterations in quality of life, and propensity for anxiety and depression. This is further

supported by Yew et al. (2020), who confirm the positive association of skin disease in conjunction with depressive symptoms, and the negative association with quality of life. Moreover, cutaneous body image was found to be more negative in patients with skin conditions when compared to their healthy counterparts, as established by Hinkley et al. (2020). Costeris et al. (2021) further ascertain the link between mental health risk factors such as lower self-esteem and lower perceived social support in dermatological patients when compared to controls who are not affected by a skin disorder. As a whole, the eight studies included in this content area advocate for (a) interventions that improve the early detection and evaluation of the complex relationship between atopic conditions and mental health disorders, (b) methods to treat and prevent these conditions and risk factors, (c) emphasizing the need of psychosocial care and psychotherapy, and (d) the use of integrated, holistic, multidisciplinary management of these disorders to positively affect the well-being of the individual as a whole despite their skin condition.

Lack of Mental Health Screening in Patients with Atopic Conditions

Literature has found that psychiatric disorders are prevalent among patients with dermatological issues, with rates ranging from 30-40% with a comorbid diagnosis (Roberts et al., 2020). As a result of the prevalence and intersection of dermatological conditions and mental health disorders, the field of psychodermatology has emerged. This field has given rise to the necessity for dermatologists and other specialists such as allergy and immunology providers to follow an interdisciplinary approach, which primarily emphasizes the need of screening patients for mental health conditions and risk factors, to carry out prompt and efficacious management. However, despite the association between these dermatological conditions and mental health disorders,

screening for mental health among these patients is still lacking due to a variety of reasons, including lack of comfort and training of psychodermatology, time constraints, and low confidence in screening. This section area analyzes four literature articles regarding lack of mental health screening among patients with dermatological conditions, including atopic dermatitis, and the barriers that hinder its implementation.

Singh & Silverberg (2019) used an analytical observational study design to examine rates of depression screening in United States outpatients among patients with psoriasis or atopic dermatitis. Researchers analyzed data for 2006-2015 from the National Ambulatory Medical Care Survey, which is conducted by the National Center for Health Statistics. Survey participants were asked to provide data on approximately 30 patient visits during a randomly assigned 1-week reporting period. The survey utilized a multistage estimation procedure with weights to adjust for nonresponse. In total, 9,345 visits for atopic dermatitis and 2,085 visits for psoriasis were analyzed. Multivariable logistic regression models were constructed to determine the association of depression screening with these of step-up treatment, clinician specialty, and patient sex. Results ultimately indicated that despite well-established associations of psoriasis and atopic dermatitis with depression and suicidality, depression screening rates among patients with psoriasis and patients with severe atopic dermatitis are low. Singh & Silverberg (2019) recommend increased and timely screening of depression in these higher risk patients and suggest that future efforts explore methods to improve screening for mental health comorbidity in psoriasis and atopic dermatitis.

Streight et al. (2020) conducted a descriptive cross-sectional study that sought to determine the extent of dermatology residency training on depression screening.

Researchers created and disseminated a 12-question survey that would assess the level of resident training and comfort in depression screening for patients with acne vulgaris, atypical dermatitis, psoriasis, hidradenitis suppurative, and skin cancer. Participants were gathered via a convenience sampling method and were included if they were part of a dermatology department at an accredited medical school or college of osteopathic medicine. In total, 56 residents from residency programs in all regions of the United States completed the survey. Data was analyzed using ANOVA, with a *p*-value less than 0.0001, ratings of confidence in screening were similar across all conditions, with averages ranging from 5.8 to 6.7. Results indicated that generally, while participants find the need of screening for depression an important aspect to care, most participants would only occasionally screen for depression in patients with atopic dermatological conditions, revealing a lower level of confidence in screening. Due to these findings, researchers urge that providers collaborate with psychiatrists and to improve education on depression screening within the curriculum. By doing so, it fosters an environment where providers will be able to better recognize patients with mental health risk factors, which leads to more efficient and effective treatment.

Holsken et al. (2021) acknowledge the growing evidence that links psoriasis and the development of depression, however, this burden is often undetected by dermatologists and leads to the underdiagnosis and undertreatment of depression amongst these patients. A variety of factors contribute to the under detection of depressive symptoms among patients with atopic conditions such as psoriasis; these include insufficient training in psychiatric diagnosis, stigmatization of psychiatric diagnosis, limited access to psychotherapeutic treatment, and limited time constraints to conduct

extensive interviews with patients, which include the implementation of screening tools. Due to this nature, researchers set out to explore the clinical usefulness of the Two Question Test (TQT) to ascertain whether is a useful tool that can be implemented to assess depressive symptoms in psoriasis patients. To accomplish this, researchers performed a retrospective analysis of patient records focusing on patients who initiated systemic treatment with a biologic in the clinic and investigated correlations of the TQT with both psoriasis severity and measures of mental well-being over the course of the first 28 weeks of treatment. Researchers utilized a purposive sample method to identify a sample population of 139 patients with psoriasis who underwent systemic treatment with a selective IL23 or IL17A inhibitor in the Department of Dermatology, University Hospital Essen, Germany between August 2019 and February 2021. Of these patients 95 screened positive for depressive symptoms and answered yes to at least one TQT question. To assess correlation of TQT and visibility of lesions, a chi-squared test was used, and to answer the question of how far the results of the TQT are sensitive to change, a mixed model analysis was conducted. Results revealed no association between the TQT scores, and skin symptoms measured by the psoriasis Area and Severity Index and the visibility of skin lesions, however, skin related quality of life was analyzed with the Dermatology Quality of Life index and was found to be associated with TQT test scores. Longitudinal analysis revealed improvement of TQT outcomes over the course of treatment, indicating usefulness as an initial screening tool for depressive symptoms and a sensitive tool for repeated assessment of depressive symptoms in psoriasis management. Ultimately researchers recommend the implementation of the TQT test as it

is short, easy to interpret and can be considered in real time by the physician when in conversation with the patient.

Kromer et al. (2021) carried out a prospective multicentric cohort study of patients with the atopic condition of psoriasis in efforts to (a) follow their risk of depression according to validated screening instruments, (b) evaluate individual pathways to mental healthcare, and (c) determine the efficacy of depression screening in a real-life setting. Researchers hold that while it is recommended for dermatological patients to be screened for depression, even if cases are recognized, the proportion of patients receiving psychiatric treatment is inappropriately low. A purposive sampling method was utilized to screen 355 patients with psoriasis for depressive symptoms by utilizing the revised Beck Depression Inventory (BDI-II). In total, 130 patients screened positive for depressive symptoms and of these, 71 patients followed up. Cohort characteristics were analyzed descriptively while subgroup data was analyzed by utilizing Pearson's chi-squared test. Changes of parameters including disease severity, quality of life, and depression scores were using Wilcoxon rank sum test or *t*-tests. Finally, multivariate regression was implemented to evaluate influence of sex, psoriatic arthritis, difference of disease severity of psoriasis score, and whether psychiatric treatment was received. Study results indicated that screening for depressive symptoms led to increased utilization of mental health care and improvement of psoriasis, depressive symptoms, and quality of life. Given these results, researchers believe that providers are in a unique position to not only triage their patients, but also to educate them of their treatment options. Therefore, Kromer et al. (2021) recommend the implementation of mental health screening in routine care to optimize patient management.

The findings of the research articles included in this content area not only identify the gap in mental health screening for patients with atopic conditions, but also demonstrate several barriers that impede its implementation in practice. Streight et al. (2020) urges the implementation of collaboration between psychiatrists and providers who treat patients with atopic conditions to improve education on depression screening within the curriculum. Unfortunately, providers cite limited knowledge as a barrier of conducting mental health screenings in their patients. By promoting this collaboration, providers should ideally be able to better identify, and treatment of the mental health comorbidities associated with dermatologic diseases. On the cusp of supporting education for providers, Singh & Silverberg (2019), recommend increased and timely screening of patients with atopic conditions for mental health comorbidity, which, as also recommended by Kromer et al. (2021), when integrated in routine care, can optimize patient management, and improve of quality of life. Holsken et al. (2021) recognize the link between atopic conditions like psoriasis and the development of mental health conditions like depression, therefore after setting out to determine whether the implementation of the TQT would be efficient and effective, researchers found that the integration of such a tool could certainly be done in real time and poses a great opportunity in identifying patients who are in need of further mental health management.

Healthcare Providers' Knowledge Deficits of Psychiatric Risk Factors in Pediatric Patients

Patients who are seen by specialists such as dermatologists have been found to have a higher prevalence of psychiatric symptoms when compared to the general population, however, many providers fall short in addressing their patients' psychosocial

complaints (Roberts et al., 2020). Consequences of failing to address these needs can have severe repercussions in the form of mental health disorders, self-injurious behaviors, and even suicide. This begs the need for all providers across the spectrum, from primary care to specialists, to take accountability and own their role in assessing mental health risk factors in their given patient population, however, literature reveals a significant knowledge gap among providers to address their patient's psychosocial needs if not their primary role. As mentioned in the previous content area which discussed lack of mental health screening, many providers fail to identify psychiatric risk factors in their patients, often attributed to limited knowledge and lack of confidence in their ability to assess these risk factors accordingly. This content area analyzes four literature articles that address and identify knowledge deficits of providers, as it pertains to the identification psychiatric risk factors in patients, as well as a path forward to combatting this reality.

Pronizius & Voracek (2020) conducted a descriptive and exploratory study to (a) estimate the rates of suicides, suicide attempts, and suicidal thoughts in Austrian patients with AD, psoriasis, or acne based on the perspective of dermatologists' self-reports, (b) assess provider knowledge of suicide, suicide intervention, and prevention strategies, and (c) to promote cooperation amongst dermatologists and mental health professionals. Researchers utilized a voluntary sampling methodology of a large majority of the total population of dermatologists in Austria. A link to a questionnaire which was specifically developed for this study was sent to 450 self-employed dermatologists, from which a total of 45 participated. Data was analyzed using a variety of methods including binomial test, ANOVA, Jonckheere-Terpstra Test, Shapiro-Wilk Test, Levene's Test, the Kruskal-Wallis H test, *t*-Test, and the Mann-Whitney U test. Results indicated three

dermatologists who reported more than five patients with AD, psoriasis, or acne who died by suicide in 2017, seven providers treated between 1 and 10 patients with suicidal ideation, and finally, the majority (82%) of dermatologists knew these patients are at higher risk. Pronizius & Voracek (2020) suggest that the low identified rate of suicidal ideations reported could likely be due to the Austrian healthcare system and dermatologists' underestimation of the problem. Therefore, investigators recommend the promotion of multidisciplinary collaboration between dermatologists and mental health professionals to address patient suicidality, as some dermatologists admit they do not know how to address patients' suicidality appropriately. If gone unaddressed, this raises the concern of patients going undetected, unassessed, and untreated for mental health conditions, despite its association with skin conditions. In addition to promoting interdisciplinary collaboration, investigators recommend the promotion of suicide-prevention training programs to providers, distributing suicide-prevention brochures in practice, and addressing the problem of suicide in patients with chronic skin disorders with those that have a diagnosis (Pronizius & Voracek, 2020).

Roberts et al. (2020) performed a systematic literature review to examine (a) the knowledge, attitude, and practices of health care professionals regarding psychodermatology, (b) highlight the need for training programs to implement specific training curricula in psychodermatology, and (c) to urge board certification entities to provide continuing medical education modules for practicing providers. The researchers performed a comprehensive search of relevant articles from four electronic databases, ensuring included articles were peer-reviewed, had data that could be extracted, and ultimately were pertinent to the study purpose by targeting healthcare professionals as

participants. Articles were included if their study participants included health care professionals, their studies contained data that could be extracted, and studies that were published in peer-reviewed journals. While 102 articles were identified through electronic search, after removing duplicate studies, and applying inclusion and exclusion criteria, a total of nine articles met all criteria established. Data was extracted to analyze the studies' target population (varying by healthcare provider/healthcare specialty), knowledge and attitudes, and practices. Results revealed that providers do in fact frequently report psychocutaneous disorders in their practice, however, due to gaps and variations in provider knowledge base, level of comfort to assess and treat these patients, as well as a lack of training of psychodermatology, there is a delay in screening, diagnosing, and treating this patient population. Roberts et al. (2020) recommend (a) addressing the knowledge, attitudes, and practice of psychodermatology among providers to allow the field to gain more traction and be applied to more patients, (b) consider implementing training modules that address identified knowledge gaps, and (c), consider implementing combined psychodermatology clinics to address the needs of this population.

Imfeld et al. (2021) conducted a scoping review to (a) describe the state of perceptions and possible stigma towards mental health in pediatric primary care (b) shed light on the limitations regarding mental health care assess, particularly the increased need for care and insufficient number of mental health specialists, and (c) review barriers such as the physician stigma towards mental health diagnosis, treatment, and management. To accomplish the goal of inquiring about stigmatization of mental health disorders in the pediatric provider population, researchers parsed through existing

literature throughout five databases, all set with parameters that limited search results to articles published within the past ten years. Their initial search yielded 457 titles, however only eight full-text manuscripts met the full inclusion criteria. To analyze the results included in this study, researchers identified common themes present throughout all articles and discussed each theme accordingly. Results of this scoping review found concern among pediatricians, citing lack of confidence prescribing medications for diagnoses such as depression and anxiety, and that such lack of confidence or comfort stems from personal bias or stigma regarding the treatment of the diagnoses or medication as a viable treatment option. Additionally, pediatricians noticed improvement in their competency and comfort level in managing mental health conditions, when presented with the ability for collaboration with mental health providers during treatment. Researchers note the importance and recommend that pediatricians gain the skills necessary to diagnose and manage mental health disorders as the number of children who require these services continue to grow. Given the limited knowledge that exists, and to continue on a path of discovery and improvement, Imfeld et al. (2021), urge that further studies inquire how pediatrician stigma towards mental health affects impacts patient care. Moreover, researchers urge that this be studied across all ranges of care, stating how the field of healthcare as whole could benefit from further physician studies that investigate how stigmatization of mental health affects patient care across all settings.

Gadassi et al. (2022) conducted a cross sectional study that aimed to (a) examine the perception of the pediatrician's role in the management of psychosocial problems in Israel from the perspective of both parents and pediatricians, and (b) identify potential barriers of incorporating psychosocial support. Investigators randomly selected 1,000

parents with children under the age of 10 from a large database that represented the Israeli population, in addition to implementing phone surveys through a polling company. Moreover, 173 pediatricians were recruited both at a medical conference and by a web-based questionnaire. Data analysis included descriptive statistics, Pearson correlation coefficients, and *t*-tests. Results indicated that pediatricians with some level of previous training relating to psychosocial issues were more likely to report on a lack of professional confidence and insufficient resources as barriers to their involvement, while pediatricians who had no training were more likely to report on the parents' perception of their role as the barrier to involvement of psychosocial problem management. Despite pediatricians reporting some level of training regarding the management of psychosocial matters, their lack of confidence is suggestive of the need to implement further methods to improve the management of psychosocial problems. Researchers suggest the implementation of appropriate training throughout all stages of the pediatrician's professional life cycle, including medical school, pediatric residency, and continuous medical education.

The findings of the four articles included in this content area highlight the gaps in knowledge present regarding a healthcare providers' ability to assess, treat, and manage patient's mental health needs, when it is not the provider's primary area of specialty or jurisdiction of care. Given this gap in knowledge, which can lead to serious implications for patient care, investigators such as Gadassi et al. (2022) suggest the implementation of appropriate training throughout all stages of the pediatrician's professional life cycle. This notion is further echoed by Roberts et al. (2020) who recommend the implementation of training modules to address knowledge gaps that have been previously

identified among providers. In addition to ensuring that providers have adequate understanding of mental health as it intersects with their specialty, Pronizius & Voracek (2020) suggest the promotion of multidisciplinary collaboration between providers and mental health professionals to address mental health comorbidities. When in the healthcare field, learning is an ongoing process, and there is always something that can be learned from our counterparts, this is an excellent example of how other providers have knowledge and wisdom to impart on their colleagues and vice versa. Moreover, given the gaps in knowledge among providers, Imfeld et al. (2021) additionally recommend that further investigators research how provider stigma towards mental health can impact patient care in all arenas of healthcare.

Despite Miami's highly metropolitan nature, according to the U.S. Department of Health and Human Services, areas within Miami-Dade are currently classified as Health Professional Shortage Areas (HPSA), denoting a shortage of primary care professionals, and mental health professionals (Department of Health and Human Services, n.d.). Given level of perspective granted by this advanced literature review which urged providers of all healthcare arenas, primary care and specialty care alike, to take accountability within their role of addressing their patient's psychosocial needs, it would be valuable to explore and improve healthcare providers' knowledge awareness of mental health risk factors, specifically body image impairment and its associated mental health risk factors in the pediatric population, with atopic dermatitis in an outpatient allergy and immunology clinic in Miami, Florida. To the researcher's knowledge, this form of quality improvement project specifically targeting the association of body image impairment and its associated mental health risk factors, and atopic dermatitis in an allergy and

immunology setting in Miami, Florida has yet to be implemented. If this type of quality improvement project is not pursued, children and adolescents with atopic dermatitis may continue to have unmet psychosocial, mental health needs which may manifest in the form of a variety of mental health disorders and problems including anxiety, depression, suicide, body dysmorphia, and eating disorders.

Significance

This quality improvement project is significant in the discipline of nursing. It has implications for nursing practice, research, and health policy.

Significance to Nursing Practice

Healthcare providers are individuals at the forefront of delivering care to patients who are in need of access to services. All providers, including registered nurses, advanced practice registered nurses, medical doctors, and doctors of nursing practice each play a unique role in the healthcare delivery of every patient. After assessment of a given scenario, if a gap has been identified, it is pertinent that it is promptly addressed, and measures are taken to bridge the gap. Regardless of the sphere in which the gap resides, be it lack of educational knowledge, lack of access, or lack of awareness, addressing this issue will always be of benefit to patients who are at the center of care. By progressing and supplementing providers' fund of knowledge, not only will the provider reap the benefits, but so will the entire practice of nurse, as well as the level of care that patients are granted access to. This study has the potential of increasing mental health screening of body image impairment and other associated mental health risk factors, which has the potential of improving health outcomes for the pediatric population with atopic dermatitis.

Significance to Nursing Research

To this researcher's knowledge, healthcare providers' practice competency of body image impairment and associated mental health risk factors in pediatric patients with atopic dermatitis has not been adequately and comprehensively researched within the discipline of nursing. After scouring existing literature, no evidence was found of nurse practitioner-led research in outpatient allergy and immunology settings in Miami, Florida. Increasing research in this field could promote increased awareness of mental health conditions, and promptness to seek mental health care, which may lead to improved outcomes within this vulnerable population. A project of this nature can also serve as inspiration to other healthcare professionals, who may choose to pursue research in this niche area. Without further research to supplement this project, the profession will not progress the level of knowledge necessary to continuously improve and reevaluate the way in which we serve and protect our patients so they may experience the highest quality of care. This quality improvement project aimed to fill educational gaps in provider' knowledge of body image impairment and associated mental health risk factors in pediatric patients with atopic dermatitis, with the goal of improving health outcomes and patient wellbeing.

Significance to Health Policy

Compared to their healthy counterparts, pediatric patients with atopic dermatitis are at a significantly higher risk of developing mental health disorders (Xie et al., 2019). Despite this disparity, additional barriers in place such as provider perception of mental health, lack of training and education, make it difficult for those with physically presenting conditions like atopic dermatitis to receive the psychosocially sensitive care

that is needed from their providers (Gadassi et al., 2022). Based on the findings of this study, nurses and institutions may consider developing of policies, guidelines, and/or protocols that incorporate addressing patients' psychosocial needs in addition to their current delivery of care. This project may also promote provider accountability regarding the need to continuously remain up to date with items that are known to affect their patients, such as psychosocial considerations. This means addressing their patients' mental health needs as it pertains to their role and specialty, and possessing the knowledge to be able to promptly recognize and refer patients to mental health services that may fit their needs. This project could serve as a starting point for health policy that directly addresses the requirement of all providers to interweave psychosocial care within their given field or specialty. By doing so, we all work together to meet our community's unmet mental health needs and create a healthier America.

Purpose

The purpose of this quality improvement project was to increase knowledge awareness of body image impairment and its associated mental health risk factors in the pediatric population with atopic dermatitis among healthcare providers in Miami, Florida.

Population, Intervention, Comparison, and Outcome (PICO) Clinical Question

Is there a significant difference between pre- and posttest scores among healthcare providers in an outpatient allergy and immunology clinic in Miami, Florida after implementing an educational intervention regarding body image impairment and its associated mental health risk factors in pediatric patients with atopic dermatitis?

H0: There is no significant difference between pre- and posttest scores among healthcare providers in an outpatient allergy and immunology clinic in Miami, Florida

after implementing an educational intervention regarding body image impairment and its associated mental health risk factors in pediatric patients with atopic dermatitis.

Ha: There is a significant difference between pre- and posttest scores among healthcare providers in an outpatient allergy and immunology clinic in Miami, Florida after implementing an educational intervention regarding body image impairment and its associated mental health risk factors in pediatric patients with atopic dermatitis.

Definitions of Terms

The variables of this project were knowledge awareness, age, gender, ethnicity, role, level of education, years of experience, and perceived knowledge of topic; they are described in the following paragraphs.

Knowledge Awareness

This term refers to healthcare providers' awareness surrounding body image impairment and associated mental health risk factors in pediatric patients with atopic dermatitis at an outpatient allergy and immunology clinic in Miami, Florida. To measure this variable, the researcher implemented a modified Body Dysmorphic Disorder Questionnaire–Dermatology Version (BDDQ-DV) originally developed by Dufresne et al. (2001), before and after presenting an educational intervention in the form of a PowerPoint presentation session. This questionnaire was found to have a high specificity of 94.7%, and high sensitivity of 100% (Dufresne et al., 2001). Four additional items were included to more specifically assess and measure healthcare provider's knowledge awareness of body image impairment and mental health risk factors in pediatric patients with atopic dermatitis.

Age

This variable refers to the age of the healthcare provider participants who provide and deliver care to patients at the outpatient allergy and immunology clinic in Miami, Florida. This demographic and ratio variable was grouped as follows: (a) 18 to 29 years, (b) 30 to 44 years, and (c) 45 years and older.

Gender

This demographic item refers to the gender of healthcare providers who deliver care to patients at the outpatient allergy and immunology clinic in Miami, Florida. This nominal variable was categorized as follows: (a) female, (b) male, and (c) prefer not to say.

Ethnicity

This variable describes the ethnicity of the healthcare provider participants that deliver care to pediatric patients with atopic dermatitis at the outpatient clinic in Miami, Florida. This nominal variable was grouped by: (a) non-Hispanic White, (b) Hispanic, and (c) other.

Role

This variable refers to the role that each healthcare provider participant that delivers care to pediatric patients with atopic dermatitis at the outpatient clinic in Miami, Florida holds within the practice. This demographic and nominal variable was classified as follows: (a) registered nurse, (b) nurse practitioner, and (c) physician.

Level of Education

This variable describes the highest level of education attained by the healthcare provider participants that deliver care to pediatric patients with atopic dermatitis at the

outpatient clinic in Miami, Florida. This demographic and nominal variable was classified as follows: (a) bachelor's degree, (b) master's degree, and (c) doctoral degree. Degrees included those pertaining to the discipline of nursing and discipline of medicine, i.e., Associate Degree in Nursing (ADN), Bachelor of Science in Nursing (BSN), Master of Science in Nursing (MSN), Medical Doctor (MD), Doctor of Osteopathic Medicine (DO), Doctor of Nursing Practice (DNP), and Doctor of Philosophy (Ph.D.).

Years of Experience

Years of experience refers to the number of years of clinical experience that healthcare provider participants who deliver care to pediatric patients at an outpatient clinic in Miami, Florida have. This demographic variable was catalogued as follows: (a) 0 to 1 year; (b) 2 to 3 years; and (c) 4 years or more.

Perceived Knowledge of Topic

This variable refers to the perceived knowledge that healthcare provider participants who deliver care to pediatric patients at an outpatient clinic in Miami, Florida, have regarding the project topic, prior to implementation of the educational intervention. This demographic variable was labeled as follows: (a) minimal, (b) moderate, and (c) competent.

Conceptual Underpinning

This project was conducted utilizing the positivist paradigm. The researcher measured knowledge awareness of body image impairment and its associated mental health risk factors in pediatric patients with atopic dermatitis, among healthcare providers in an outpatient allergy and immunology clinic in Miami, Florida before and after the implementation of an educational intervention. As a positivist, the researcher assumes

that knowledge awareness of the topic of interest will increase among healthcare providers in an outpatient allergy and immunology clinic in Miami, Florida after the implementation of an educational intervention. The researcher used the scientific method to analyze data and examine the results of the project.

Theoretical Framework

This project utilized Jean Watson's Theory of Human Caring as the foundational theoretical framework that will guide this quality improvement project. Watson developed her theory of caring from 1975-1979 and was based on a vision in which nursing serves as its own developing discipline and separate field of healthcare that encapsulates a different set of values, expertise, methods, and ethical and social missions (Devi et al., 2022).

Watson's theory of caring outlines a unique set of ten caring-healing skills, which were coined "carative variables," and later evolved into the Ten Caritas Processes (Devi et al., 2022; Wei & Watson, 2018). Watson's Ten Caritas Processes include: (1) practicing lovingkindness to self and others, (2) being authentically present to enable faith, hope, and the inner-subjective life world of oneself and others, (3) fostering one's own spiritual practices, (4) developing trusting interpersonal caring relationships, (5) forgiving and showing empathy to self and others, (6) using all ways of knowing, (7) engaging in genuine teaching-learning experiences, (8) creating a caring-healing environment for all involved, (9) valuing humanity, and (10) embracing the unknowns and miracles in life (Wei & Watson, 2019).

Given the tenants of Watson's theory of caring, the application of this theoretical framework is appropriate for the researcher's quality improvement project, which aims to

reduce poor health outcomes and improve quality in pediatric patients with atopic dermatitis by increasing knowledge awareness of body image impairment and its associated mental health risk factors among healthcare providers. One of Watson's fundamental carative factors holds the necessity of engaging in genuine teaching-learning experiences, which is an area of focus for this quality improvement project (Wei & Watson, 2019). The goal is to impart additional knowledge and awareness among healthcare providers regarding body image impairment in the given population, which will then be integrated into patient care, thereby improving health outcomes for individuals, families, and communities (Devi et al., 2022; Wei. & Watson, 2019).

Methodology

The purpose of this quality improvement project was to increase knowledge awareness of body image impairment and its associated mental health risk factors in the pediatric population with atopic dermatitis among healthcare providers in Miami, Florida, with a goal of reducing poor health outcomes and improving quality of life in this population. This researcher conducted an advanced literature review and identified gaps in the literature in relation to awareness of body image impairment in pediatric patients with atopic dermatitis among healthcare providers. Findings from the literature review were utilized to develop a PICO clinical question and to justify the need of conducting this quality improvement project. The following section will explore the study design, setting, sample, inclusion criteria, exclusion criteria, intervention, measures and instruments, data collection procedures, data analysis, and protection of human subjects.

Study Design

This researcher utilized a quantitative, descriptive, cross-sectional, pre- and posttest study design. These designs will be discussed in the next paragraphs.

Quantitative Research

Polit and Beck (2017) describe quantitative research as the investigation of a given phenomenon through the gathering of numerical measurements and its subsequent quantification. This form of research involves a rigorous and controlled design. This researcher aimed to investigate the knowledge awareness of body image impairment and its associated mental health risk factors in the pediatric population with atopic dermatitis among healthcare providers in an outpatient allergy and immunology clinic in Miami, Florida. The investigator collected demographic data from healthcare providers, as well

as utilized the modified Body Dysmorphic Disorder Questionnaire–Dermatology Version (BDDQ-DV) (originally developed by Dufresne et al., 2001, and modified by the researcher) to quantify knowledge awareness using Qualtrics. Differences between the variables were analyzed utilizing the Statistical Package for Social Sciences (SPSS) program.

Descriptive Design

Polit and Beck (2017), detail the role of descriptive research within nursing as one that aims to identify, describe, explore, predict, and explain aspects of a naturally occurring phenomenon; this design is advantageous as it poses the ability to provide insight into understanding the underlying causes of a given phenomenon. This design heavily revolves around observation, description, and documentation of a given situation. This researcher is interested in exploring the role of body image impairment and its associated mental health risk factors in pediatric patients with atopic dermatitis among healthcare providers.

Cross-Sectional Design

This researcher utilized a cross-sectional design to conduct the quality improvement project. Cross-sectional study designs involve the collection of data pertaining to a given phenomenon at a single point in time and are useful for describing the relationship between the phenomenon at a given fixed-point in time (Polit & Beck, 2017).

Pre and Posttest Design

This quality improvement project was conducted under a pre- and posttest design method to measure changes in knowledge awareness of body image impairment and its

associated mental health risk factors in pediatric patients with atopic dermatitis among healthcare providers. Knowledge awareness was measured before and after an educational intervention. The researcher utilized the modified Body Dysmorphic Disorder Questionnaire–Dermatology Version (BDDQ-DV) to quantify knowledge awareness (Dufresne et al., 2001).

Population, Intervention, Comparison and Outcome (PICO) Clinical Question

Is there a significant difference between pre- and posttest scores among healthcare providers in an outpatient allergy and immunology clinic in Miami, Florida after implementing an educational intervention regarding body image impairment and its associated mental health risk factors in pediatric patients with atopic dermatitis?

H0: There is no significant difference between pre- and posttest scores among healthcare providers in an outpatient allergy and immunology clinic in Miami, Florida after implementing an educational intervention regarding body image impairment and its associated mental health risk factors in pediatric patients with atopic dermatitis.

Ha: There is a significant difference between pre- and posttest scores among healthcare providers in an outpatient allergy and immunology clinic in Miami, Florida after implementing an educational intervention regarding body image impairment and its associated mental health risk factors in pediatric patients with atopic dermatitis.

Setting

This researcher conducted the quality improvement project at an outpatient allergy and immunology clinic in Miami, Florida that is associated with a large hospital and healthcare system.

Sample

A convenience sampling method was used to recruit participants and access data. The sample size consisted of five participants who are currently employed at an outpatient allergy and immunology clinic. Polit and Beck (2017) defined convenience sampling as a non-probability method in which the sample is obtained from a group of people that is easy to reach.

Inclusion Criteria

Participants considered for inclusion in this project will consist of healthcare providers who work at an outpatient allergy and immunology clinic in Miami, Florida. Only participants over the age of 18 years were included. Participants must hold one of the following healthcare roles to be considered for inclusion in this study: medical doctors (physicians), advanced practice registered nurses (nurse practitioners), and registered nurses (nurses), and must provide direct care to patients aged 1-17 with a diagnosis of atopic dermatitis.

Exclusion Criteria

Healthcare providers who are not employed specific outpatient allergy and immunology clinic in Miami, Florida, did not participate in this quality improvement project. Healthcare providers who do not provide care to youths of ages 1-17 were not included in this quality improvement project. Additionally, individuals who were under the age of 18 years were excluded from participating in this study.

Intervention

Institutional Review Board (IRB) approval was obtained from Florida International University and a large hospital which is directly associated with the allergy

and immunology clinic, in Miami, Florida prior to data collection. Technology was utilized to conduct this project; invitations to potential participants were sent via email, in addition to providing potential participants with information regarding project purpose and objectives. Additionally, the demographic instrument, pretest, posttest, and educational intervention were all disseminated and completed with the use of technology. Potential participants were provided with an overview of the project in advance, thereby allowing them to make informed decisions regarding their voluntary participation in the study.

Upon consent to participate in the quality improvement project, participants were provided with a demographic questionnaire and a pretest survey which was completed through Qualtrics to assess their knowledge awareness of body image impairment and its associated mental health risk factors in pediatric individuals with atopic dermatitis. After the completion of the online pretest survey, participants viewed a 10-minute voiceover PowerPoint presentation provided by the researcher, with the goal of increasing their knowledge awareness of body image impairment and its associated mental health risk factors in pediatric patients with atopic dermatitis. Immediately after the PowerPoint presentation, participants completed an online posttest survey to reassess their knowledge awareness of body image impairment and associated mental health risk factors in pediatric patients with atopic dermatitis. The pre- and posttest surveys are a modified version of the Body Dysmorphic Disorder Questionnaire–Dermatology Version (BDDQ-DV) quiz.

Measures and Instruments

Demographic data was collected using a researcher-developed demographic instrument including: age ([a] 18 to 29 years old; [b] 30 to 44 years old; and [c] 45 years and older); gender ([a] female; [b] male; [c] prefer not to say); ethnicity ([a] non-Hispanic White; [b] Hispanic; and [c] Other); level of education ([a]bachelor's degree; [b] master's degree; or [c] doctoral degree); role ([a] Registered Nurse; [b] Advanced Practice Registered Nurse; or [c] Physician); years of experience in the current role ([a] 0 to 1 year; [b] 2 to 3 years; or [c] 4 or more years); and perceived knowledge of the topic ([a] minimal; [b] moderate; or [c] competent).

Knowledge awareness of body image impairment and its associated mental health risk factors in pediatric patients with atopic dermatitis among healthcare providers at an outpatient allergy and immunology clinic in Miami, Florida was quantified using an instrument. A modified version of the Body Dysmorphic Disorder Questionnaire–Dermatology Version (BDDQ-DV) was utilized to measure knowledge awareness. According to Dufrense et al. (2001), the BDDQ-DV has a high specificity of 94.7%, a sensitivity of 100%, a positive predictive value of 70% and a negative predictive value of 100%. Four additional questions were included to measure healthcare providers' knowledge awareness of body image impairment and associated mental health risk factors in pediatric patients with atopic dermatitis: *1. Pediatric patients with atopic dermatitis prone to mental health risk factors.; 2. Mental health risk factors lead to poor quality of life in pediatric patients with atopic dermatitis.;3. It is important to screen for body image impairment and other mental health risk factors in pediatric patients with atopic dermatitis.; 4. I should inquire about body image impairment and other mental*

health risk factors in pediatric patients with atopic dermatitis. The responses to the modified questionnaire will follow a 5-point Likert scale: (a) strongly agree, extreme and disabling, and extreme and incapacitating = 5 points, (b) agree, severe and very disturbing, and severe causes substantial impairment = 4 points, (c) Neither agree/disagree, moderate and disturbing but still manageable, and moderate definite interference but still manageable = 3 points, (d) disagree, mild and not too disturbing, and mild interference but overall performance not impaired = 2 points, (e) Strongly disagree, no distress, and no limitation = 1 point, and (f) Don't know = 0 points. True to the original scale, nine items were reverse coded, and four items were added to reflect a modified BDDQ-DV questionnaire, which resulted in a total of 13 items. The highest obtainable score was 65, while the lowest possible score was zero.

Data Collection Procedures

Institutional Review Board (IRB) approval was obtained from Florida International University and a large hospital which is directly associated with the allergy and immunology clinic, in Miami, Florida. This researcher also obtained permission from the managing team at an outpatient allergy and immunology clinic in Miami, Florida, in addition to obtaining Institutional Review Board approval from the University of Miami (UM) in order to conduct the quality improvement project. Convenience sampling method was used to recruit participants and access data at an outpatient allergy and immunology clinic in Miami, Florida. An email was sent to potential participants, detailing the purpose and objectives of the quality improvement project. Participants were first provided with a demographic survey that was completed virtually via Qualtrics, and collected the following: age ([a] 18 to 29 years old; [b] 30 to 44 years old; and [c] 45

years and older); gender ([a] female; [b] male; [c] prefer not to say); ethnicity ([a] non-Hispanic White; [b] Hispanic; and [c] Other Ethnicity); level of education ([a] bachelor's degree; [b] master's degree; or [c] doctoral degree); role ([a] Registered Nurse; [b] Advanced Practice Registered Nurse; or [c] Physician; years of experience in the current role ([a] 0 to 1 year; [b] 2 to 3 years; or [c] 4 or more years); and perceived knowledge of the topic ([a] minimal; [b] moderate; [c] competent).

The participants then completed an online pretest in the form of the modified Body Dysmorphic Disorder Questionnaire–Dermatology Version (BDDQ-DV), prior to exposure of the 10-minute voiceover PowerPoint educational intervention. After the educational PowerPoint was presented, participants were instructed to take a posttest to reassess their knowledge of body image impairment and its associated mental health risk factors. All components took approximately 30 minutes to complete. The researcher disseminated the project via email, and the project ended when one of these two options was reached first: project duration of four weeks has concluded, or a sample size of N=5 has been reached.

Data Analysis

Data collection was conducted in an anonymous manner using Qualtrics. Data was processed, coded, cleansed, and analyzed using the Statistical Package for Social Sciences (SPSS) program. The researcher utilized descriptive analysis to calculate the mean *(M)*, median *(Mdn)*, mode, and standard deviation *(SD)*. Statistically significant differences between variables were examined using the *t*-test, allowing for evaluation of differences between values before and after educational intervention is implemented. A p-value < 0.05 was considered statistically significant (Polit & Beck, 2017).

Protection of Human Subjects

In order to ensure research ethics and the protection of human subjects, Institutional Review Board (IRB) approval was obtained from Florida International University was obtained prior to the project's initiation. In addition, IRB approval was also obtained from a large hospital system in which the outpatient allergy and immunology clinic in Miami, Florida is associated with. The investigator remained current with the Collaborative Institutional Training Initiative (CITI) ethics certification associated with the protection of human subjects in social and behavioral research. Data collected for this quality improvement project was conducted anonymous using Qualtrics. Participation in this project is voluntary, and participants were informed of their ability to withdraw consent to participate at any stage of this project without penalty. Prior to participation, potential participants were provided with an overview of the project, including the purpose and objectives of the project, potential benefits to participants, which include an increased knowledge awareness of body image impairment and associated mental health risk factors in pediatric patients with atopic dermatitis, and potential risks associated with the project. This project potentially involves minimal risk, harm, or discomfort. However, the probability and magnitude of risk, harm, or discomfort anticipated are not greater than those ordinarily encountered in daily life. Data collected throughout this study was stored and organized anonymously on electronic spreadsheets that were maintained on a password protected computer, to which only the researcher had access to.

Results

The purpose of this quality improvement project was to increase knowledge awareness of body image impairment and its associated mental health risk factors in the pediatric population with atopic dermatitis among healthcare providers in an outpatient allergy and immunology clinic in Miami, Florida. A a quantitative, descriptive, cross-sectional, pre- and posttest study design was utilized to conduct this quality improvement project. Data was gathered via Qualtrics and analyzed using the Statistical Package for Social Sciences (SPSS) version 29.0.0.0. A two-tailed paired sample *t*-test was employed to discover significant differences between pre- and posttest results. Subsequent sections will discuss demographic data and results related to the PICO clinical question

A total of $N = 5$ healthcare providers participated in this quality improvement project. With the aid of unique identifiers, demographic questionnaires and pretests without paired posttests were excluded from data analysis. A total of $N = 5$ participants completed both pre- and posttests. Thus, the total sample size consisted of $N = 5$ participants.

Participants varied in age, see Table 1 and Figure 1. Less than half of all participants were 30 to 44 years of age. Over half of the participants were aged 45 years and older. No participants identified as aged 18 to 29.

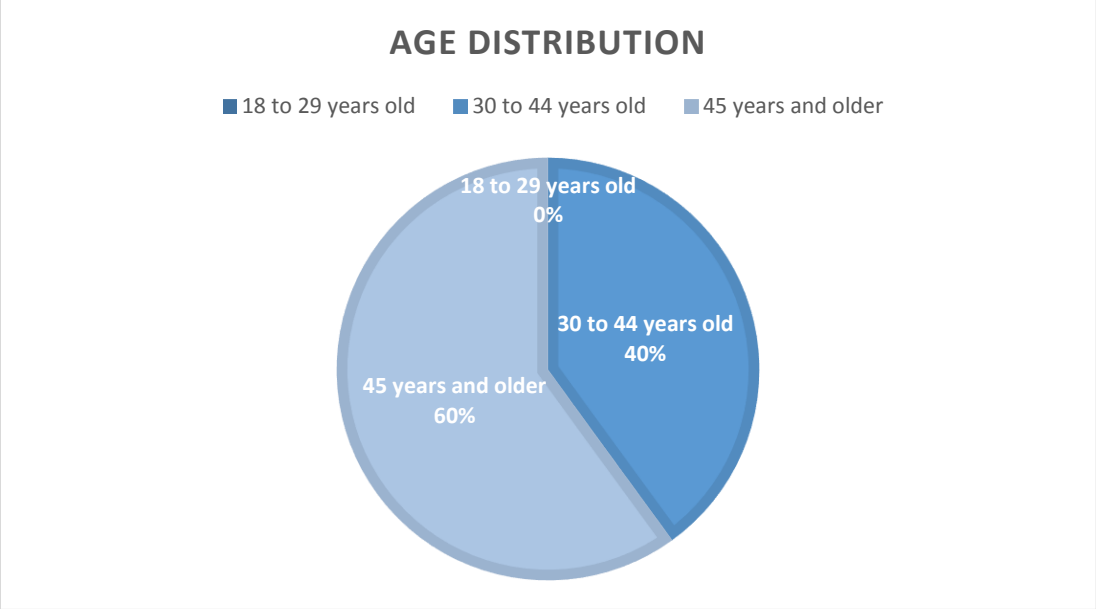
Table 1

Age Distribution Among Healthcare Providers at an Outpatient Pediatric Allergy and Immunology Clinic (N=5)

Age	Frequency	Percentage
18 to 29 years	0	0%
30 to 44 years	2	40%
45 years and older	3	60%
Total	5	100%

Figure 1

Age Distribution Among Healthcare Providers at an Outpatient Pediatric Allergy and Immunology Clinic (N=5)



Participants identified as female, male, or prefer not to say, see Table 2 and Figure 2. Over three quarters of all participants identified as female, while less than a quarter of participants identified as male. No participants identified as prefer not to say.

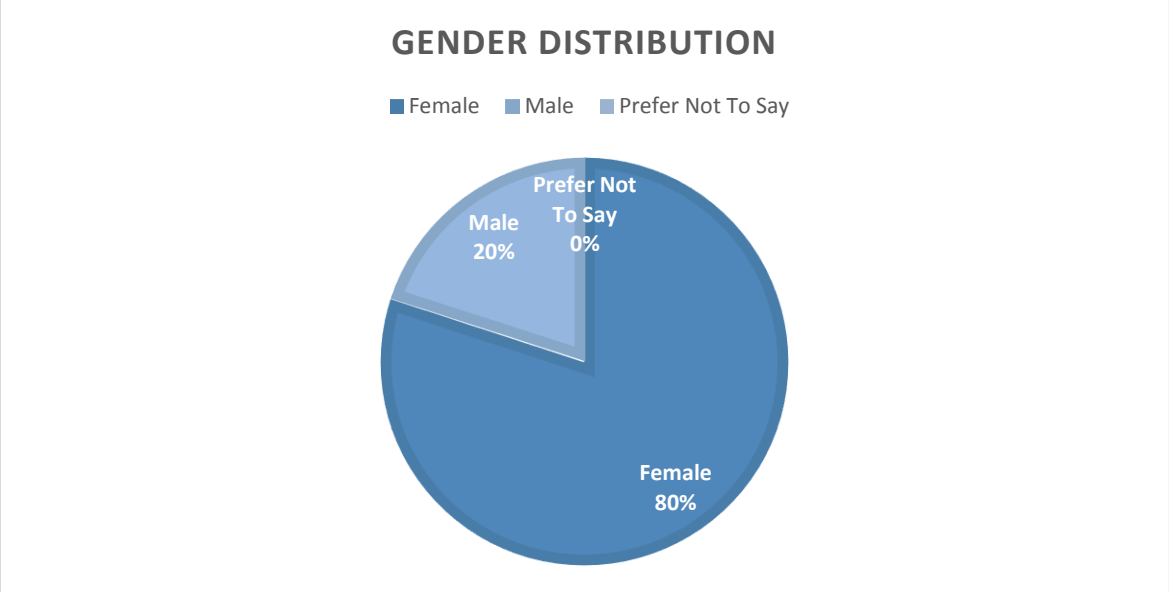
Table 2

Gender Distribution Among Healthcare Providers at an Outpatient Pediatric Allergy and Immunology Clinic (N=5)

Gender	Frequency	Percentage
Female	4	80%
Male	1	20%
Prefer Not to Say	0	0%
Total	5	100%

Figure 2

Gender Distribution Among Healthcare Providers at an Outpatient Pediatric Allergy and Immunology Clinic (N=5)



Participants varied in ethnicity, see Table 3. Most participants identified as non-Hispanic White, while less than a quarter of participants identified as Hispanic. None of the participants self-identified as another ethnicity.

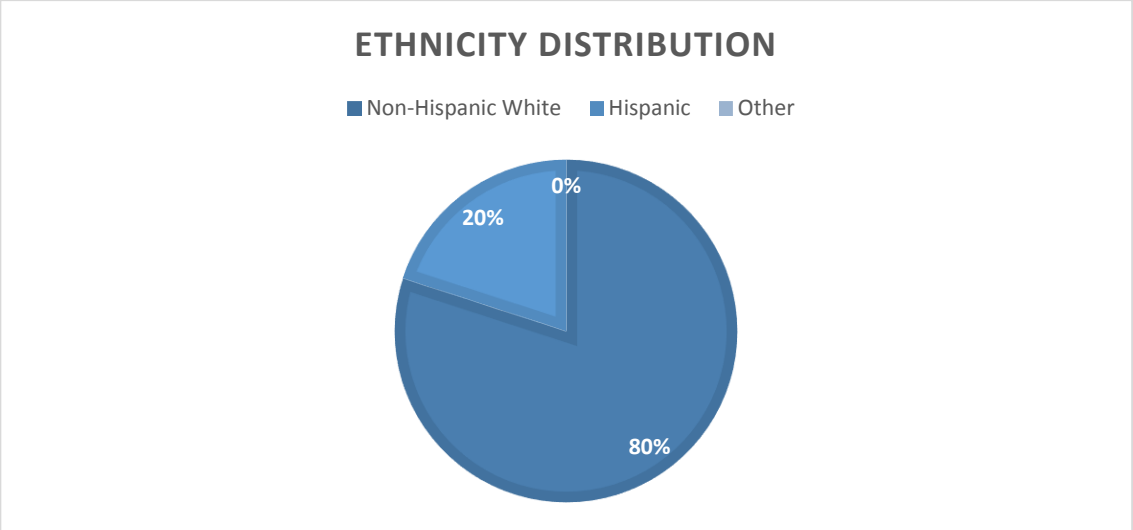
Table 3

Ethnicity Distribution Among Healthcare Providers at an Outpatient Pediatric Allergy and Immunology Clinic (N = 5)

Ethnicity	Frequency	Percentage
Non-Hispanic White	4	80%
Hispanic	1	20%
Other	0	0%
Total	5	100%

Figure 3

Ethnicity Distribution Among Healthcare Providers at an Outpatient Pediatric Allergy and Immunology Clinic (N = 5)



Participants ranged in highest level of education, see Table 4. Less than half of all participants hold a Bachelor's degree (i.e., Bachelor of Science in Nursing). Similarly, less than half of all participants hold a Doctoral Degree (i.e., Medical Doctor, Doctor of

Osteopathic Medicine, Doctor of Nursing Practice, Doctor of Philosophy, Ph.D.) However, less than a quarter hold a Master's degree (i.e., Master of Science in Nursing).

Table 4

Level of Education Among Healthcare Providers at an Outpatient Pediatric Allergy and Immunology Clinic (N = 5)

Level of Education	Frequency	Percentage
Bachelor's degree	2	40%
Master's degree	1	20%
Doctoral degree	2	40%
Total	5	100%

Participants' role within the outpatient allergy and immunology clinic varies, see Table 5. Nearly half of all participants are physicians. Nurses also make up nearly half of the participants in this study. Less than a quarter of participants hold the role of nurse practitioner at this facility.

Table 5

Healthcare Provider Role at an Outpatient Pediatric Allergy and Immunology Clinic (N = 5)

Provider Role	Frequency	Percentage
Registered Nurse	2	40%
Nurse Practitioner	1	20%
Physician	2	40%
Total	5	100%

Participants' years of clinical experience was collected and categorized as 0 to 1 year, 2 to 3 years, and 4 years or more. Minimal variation was established, see Table 6. All participants had 4 years' worth of clinical experience.

Table 6

Years of Clinical Experience Among Healthcare Providers at an Outpatient Pediatric Allergy and Immunology Clinic (N = 5)

Years of Clinical Experience	Frequency	Percentage
0 to 1 year	0	0%
2 to 3 years	0	0%
4 years or more	5	100%
Total	5	100%

Participants were asked their current knowledge on body image impairment and its associated mental health risk factors among pediatric patients with atopic dermatitis as minimal, moderate, or competent, see Table 7. Over half of participants categorized their existing knowledge of the subject matter as minimal. Less than a quarter of participants rated their existing knowledge base as moderate. Similarly, less than a quarter of participants considered themselves to be competent in the topic.

Table 7

Perceived Knowledge of Topic Among Healthcare Providers at an Outpatient Pediatric Allergy and Immunology Clinic (N = 5)

Perceived Knowledge of Topic	Frequency	Percentage
Minimal	3	60.0%
Moderate	1	20.0%
Competent	1	20.0%
Total	5	100%

PICO Clinical Question

The PICO clinical question was: Is there a significant difference between pre- and posttest scores among healthcare providers in an outpatient allergy and immunology clinic in Miami, Florida after implementing an educational intervention regarding body image impairment and its associated mental health risk factors in pediatric patients with atopic dermatitis? The alternative hypothesis (*Ha)* related to the PICO clinical question was: There is a significant difference between pre- and posttest scores among healthcare providers in an outpatient allergy and immunology clinic in Miami, Florida after implementing an educational intervention regarding body image impairment and its associated mental health risk factors in pediatric patients with atopic dermatitis. Results revealed that the educational intervention did not make a statistically significant difference in increasing healthcare provider knowledge awareness on body image

impairment and its associated mental health risk factors among pediatric patients with atopic dermatitis. Pre- and posttest results will be discussed in the subsequent paragraphs.

In the pretest, answers were scored using a 5-point Likert scale. Answers indicating knowledge awareness of body image impairment were scored higher, up to 5 points, and answers suggestive of deficient knowledge awareness of body image impairment and its associated mental health risk factors were scored lower, with the lowest being 0. Items varied in scoring see Table 8. Participants scored highest on items 1, 10, 11, and 12 which were: *Patients with atopic conditions are concerned about the appearance of some part of their body; Pediatric patients with atopic dermatitis prone to mental health risk factors; Mental health risk factors lead to poor quality of life in pediatric patients with atopic dermatitis; It is important to screen for body image impairment and other mental health risk factors in pediatric patients with atopic dermatitis*. Conversely, participants scored lowest on item 6: *To what degree do you believe pediatric patients with atopic dermatitis experience impairment in social, educational, and other areas of functioning*?

Table 8

Pretest Results Among Healthcare Providers at an Outpatient Pediatric Allergy and Immunology Clinic (N = 5)

Item	*M*	*Mdn*	*SD*
1	4	4	0.707
2	3.8	4	0.836
3	3.8	4	0.836
4	3.8	4	0.836

5	3	3	1.581
6	2.6	3	1.140
7	3.6	4	1.140
8	3.8	4	0.836
9	3.8	4	0.836
10	4	4	1
11	4	4	1
12	4	4	1
13	3.8	4	1.303

Similarly, to the pretest, in the posttest, answers were scored using a 5-point Likert scale. Answers indicating knowledge awareness of body image impairment were scored higher, up to 5 points, and answers suggestive of deficient knowledge awareness of body image impairment and its associated mental health risk factors were scored lower, with the lowest being 0. Scores varied among items, see Table 9. Participants scored highest on items 2, 3, 4, 7, which were: *Pediatric patients with atopic conditions are preoccupied with concerns about some part of their body; Pediatric patients with atopic dermatitis have specific bothers about the appearance of their affected body parts; Pediatric patients with atopic dermatitis experience appearance preoccupation that affects their daily living; Pediatric patients with atopic dermatitis experience body image impairment that significantly interferes with their socialization*. Conversely, participants scored lowest on item 6, which was: *To what degree do you believe pediatric patients*

with atopic dermatitis experience impairment in social, educational, and other areas of functioning?

Table 9

Posttest Results Among Healthcare Providers at an Outpatient Pediatric Allergy and Immunology Clinic (N = 5)

Item	*M*	*Mdn*	*SD*
1	4.6	5	0.547
2	4.8	5	0.447
3	4.8	5	0.447
4	4.8	5	0.447
5	4.6	5	0.894
6	4	4	0.707
7	4.8	5	0.447
8	4.6	5	0.547
9	4.6	5	0.547
10	4.6	5	0.547
11	4.4	4	0.547
12	4.4	4	0.547
13	4.4	4	0.547

A two-tailed paired samples *t*-test was employed to analyze whether the mean difference of the posttest and the pretest was statistically significant. Results of the paired *t*-test indicated there was no significant large difference between pretest ($M = 48$, $SD =$

12.43) and posttest (*M*= 59.4, *SD* =5.98) mean scores, *t*(4)= -2.18, with a *p* = 0.095, (*p* > 0.05). see Table 10. Additionally, based on the results and an alpha value of less than 0.05, the researcher could accept the null hypothesis and reject the alternative hypothesis (*Ha1*) for the PICO clinical question.

Table 10

Two-Tailed Paired Samples t-Test Between Pre- and Posttest Mean Scores

	M	*SD*	95% Confidence Interval of the Difference		t	df	*p* value
Posttest - Pretest	-11.40	11.70	Lower: -25.92	Upper: 3.12	-2.18	4	0.095

Summary and Discussion

The purpose of this quality improvement project was to increase knowledge awareness of body image impairment and its associated mental health risk factors in the pediatric population with atopic dermatitis among healthcare providers in an outpatient allergy and immunology clinic in Miami, Florida. A quantitative, descriptive, cross-sectional, pre- and posttest study design was utilized to conduct this quality improvement project. Sample size consisted of *N* = 5 participants, comprised of MD's, APRN's, and RN's associated with an outpatient allergy and immunology clinic in Miami, Florida. A researcher developed demographic questionnaire and a modified version of the Body Dysmorphic Disorder Questionnaire–Dermatology Version (BDDQ-DV) was employed to collect data and assess provider knowledge awareness of body image impairment and its associated mental health risk factors among pediatric patients with atopic dermatitis.

A convenience sampling method was used to recruit participants and access data. Data was collected via the platform Qualtrics and was analyzed using the Statistical Package for Social Sciences (SPSS) version 29.0.0.0. Although results established that participants scored higher on the posttest after the educational intervention, there was not a statistically significantly large difference between pre- and posttest mean scores, $t(4)= -2.18$, with a $p = 0.095$, ($p > 0.05$). Subsequent sections will summarize results, compare, and contrast findings with current literature, as well as discuss implications for advanced practice nursing, limitations of the project, and recommendations.

Summary of the Results and Discussion

The mean (*M*) score of the pretest was 48, with a standard deviation (*SD*) of 12.43. In the pretest, participants scored lowest on item 6: *To what degree do you believe pediatric patients with atopic dermatitis experience impairment in social, educational, and other areas of functioning*? Participants scored highest on items 10, 11, and 12 which were: *Patients with atopic conditions are concerned about the appearance of some part of their body; Pediatric patients with atopic dermatitis prone to mental health risk factors; Mental health risk factors lead to poor quality of life in pediatric patients with atopic dermatitis; It is important to screen for body image impairment and other mental health risk factors in pediatric patients with atopic dermatitis*. Conversely, the mean (*M*) score of the posttest was 59.4, with a standard deviation (*SD*) of 5.98. In the posttest, participants scored lowest on item 6, which was: *To what degree do you believe pediatric patients with atopic dermatitis experience impairment in social, educational, and other areas of functioning?* Participants scored highest on items 2, 3, 4, 7, which were: *Pediatric patients with atopic conditions are preoccupied with concerns about some part*

of their body; Pediatric patients with atopic dermatitis have specific bothers about the appearance of their affected body parts; Pediatric patients with atopic dermatitis experience appearance preoccupation that affects their daily living; Pediatric patients with atopic dermatitis experience body image impairment that significantly interferes with their socialization. Although results established that participants scored higher on the posttest after the educational intervention, there was not a statistically significantly large difference between pre- and posttest mean scores, thus the researcher accepted the null hypothesis related to the PICO clinical question, as there was not a statistically significant large difference between the pre and posttest mean scores, $t(4)= -2.18$, with a $p = 0.095$, ($p > 0.05$).

Despite results revealing no large statistically significant difference between pretest and posttest scores after an educational intervention, current literature holds the notion of the importance of educational interventions in the enhancement of knowledge and improvement of clinical outcomes. By way of example, Walker et al. (2021) aimed to assess the impact of an educational intervention on the attitudes of nursing staff toward individuals experiencing homelessness and mental illness. Conducted in the United States at a large urban academic medical center over the course of one week, the intervention was comprised of a 45-minute educational session about persons who are homeless and have mental illness. Results revealed a mean total score of 74.78 prior to the educational intervention, and a score of 77.13 post intervention; denoting an increase in mean score and suggesting an improvement in post-knowledge scores (Walker et al., 2021).

Similarly, conducted in Tanta, Egypt, Aldeib & Saied (2020) conducted an educational intervention to increase nursing students' knowledge awareness regarding

dengue fever. The educational intervention was delivered in the form of an educational session accompanied with printed material. Results revealed that the educational session was successful in increasing student knowledge and attitudes regarding dengue fever, with nearly less than half of the students (45.5%) rating their knowledge base as "good" after the educational intervention, compared to 7.2% of participants in the pre-test (Aldeib & Saied, 2020). To this point educational interventions have been shown to positively impact knowledge awareness and attitudes surrounding the topics they aim to target.

Similarly, van Velthujsen et al. (2018) employed an educational module to increase nursing staff knowledge of delirium screening. Participants engaged in an educational session tailored to each unit according to knowledge gaps that were previously identified. Results indicate a significant increase in the frequency of delirium screening ($p = 0.0001$), indicating that patients were about 2.5 times more likely to be screened for delirium after the education intervention, compared to before the educational intervention (van Velthujsen et al., 2018).

Implications for Advanced Practice Nursing

This quality improvement project had significant implications for nursing practice, research, and health policy. This project helped healthcare providers improve their knowledge awareness of mental health risk factors in pediatric patients with atopic dermatitis. The findings of this project can be used to motivate a need to develop adequate policy that mandates healthcare providers in appropriate settings and specialties to screen patients for mental health risk factors, so their patients are able to seek timely and effective mental health care that works in tandem to support their

physical health. Instituting a policy or protocol of this nature poses the ability to improve healthcare outcomes and patient quality of life in this vulnerable population. It is important to note that the literature supports lack of comfort and training of psychodermatology, therefore, the hospital should consider instituting an additional module within the employee's specialty annual training that covers mental health risk factors in vulnerable populations. By doing so, the organization takes necessary measures to bridge the existing gap between physical and mental healthcare.

Limitations of the Project

Studies have limitations. The limitations of this project were:

1. Lack of randomization due to convenience sampling method, which was used to recruit participants and access data.
2. A low number of participants decreased the generalizability of this project.
3. A descriptive, cross-sectional, pre- and posttest design was utilized to conduct this project. This type of design cannot be used to describe casualty between the variables.
4. Data were collected from participants associated with an outpatient allergy and immunology clinic; thus, limited generalizability to other clinical settings.

Recommendations

The author recommends future studies consider a larger sample size to improve generalizability of results, as well as alternative sampling methods to improve randomization. Additionally, future studies should be aimed at expanding the educational intervention to be offered to other healthcare providers, exploring knowledge awareness of body image impairment and its associated mental health risk factors among other

relevant healthcare specialties such as pediatricians and dermatologists, and considering the implementation of future research in alternative healthcare settings such as inpatient pediatric medical surgical units, inpatient psychiatric units, outpatient private practice settings, and community clinics. Furthermore, researchers seeking guidance on future areas of study should consider exploring the best method of delivering an educational intervention that measures healthcare provider knowledge awareness of body image impairment and associated mental health risk factors among pediatric patients with atopic dermatitis.

Conclusions

This quality improvement project aimed to increase healthcare provider knowledge awareness regarding body image impairment and its associated mental health risk factors among pediatric patients with atopic dermatitis in an outpatient allergy and immunology clinic in Miami, Florida. Results of a paired t-test indicated there was not a statistically significant large difference between pretest (M = 48, SD = 12.43) and posttest scores (M= 59.4, SD =5.98); $t(4)$= -2.18, with a p = 0.095, ($p > 0.05$). Despite results indicating no significant large difference between pretest and posttest scores after an educational intervention, consistent with literature, it is recommended that healthcare providers receive training about body image impairment and mental health risk factors in pediatric patients with atopic dermatitis to improve health outcomes and quality of care in this population.

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Appendix A

FLORIDA INTERNATIONAL UNIVERSITY

INSTITUTIONAL REVIEW BOARD APPROVAL LETTER

FIU | FLORIDA INTERNATIONAL UNIVERSITY

Office of Research Integrity
Research Compliance, MARC 430

MEMORANDUM

To:	Dr. Francisco Brenes
CC:	Rebecca Sanchez
From:	Kourtney Wilson, MS, IRB Coordinator KMW
Date:	July 19, 2023
Protocol Title:	**"**Knowledge Awareness of Body Image Impairment and Its Associated Mental Health Risk Factors in Pediatric Patients with Atopic Dermatitis Among Healthcare Providers in an Outpatient Allergy and Immunology Clinic in Miami, Florida: A Quality Improvement Project**"**

The Florida International University Office of Research Integrity has reviewed your research study for the use of human subjects and deemed it Exempt via the **Exempt Review** process.

IRB Protocol Exemption #:	IRB-23-0390	**IRB Exemption Date:**	07/19/23
TOPAZ Reference #:	113388		

As a requirement of IRB Exemption you are required to:

1) Submit an IRB Exempt Amendment Form for all proposed additions or changes in the procedures involving human subjects. All additions and changes must be reviewed and approved prior to implementation.
2) Promptly submit an IRB Exempt Event Report Form for every serious or unusual or unanticipated adverse event, problems with the rights or welfare of the human subjects, and/or deviations from the approved protocol.
3) Submit an IRB Exempt Project Completion Report Form when the study is finished or discontinued.

Special Conditions: N/A

For further information, you may visit the IRB website at http://research.fiu.edu/irb.

KMW

Appendix B

UNIVERSITY OF MIAMI

INSTITUTIONAL REVIEW BOARD APPROVAL LETTER

UNIVERSITY
OF MIAMI

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APPROVAL

September 28, 2023

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On 9/28/2023, the IRB reviewed the following submission:

Type of Review:	Initial Study
Title of Study:	Knowledge Awareness of Body Image Impairment and Its Associated Mental Health Risk Factors in Pediatric Patients with Atopic Dermatitis Among Healthcare Providers in an Outpatient Allergy and Immunology Clinic in Miami, Florida: A Quality Improvement Project
Investigator:	Gary Kleiner
IRB ID:	20230707
Funding:	None
Documents Reviewed:	• CITI Certification Dr. Francisco Brenes FIU, Category: Other; • CITI Certification Rebeca Sanchez, Category: Other; • Demographic Instrument, Category: Questionnaire/Survey/Interview/Diary; • DSAC Form, Category: Other; • Educational Intervention, Category: Other; • Pre-Test and Post-Test, Category: Questionnaire/Survey/Interview/Diary; • UM Recruitment Email Rebeca.docx, Category: Other; • UM Consent Waiver.pdf, Category: Consent Form; • UM IRB Exempt Protocol Rebeca.pdf, Category: IRB Protocol

The IRB determined this study meets the criteria for an exemption as described in Federal Regulation 45 CFR 46.104. This determination is effective on 9/28/2023.

UNIVERSITY OF MIAMI

INSTITUTIONAL REVIEW BOARD APPROVAL LETTER CONTINUED

To document consent, use the consent documents that were approved and stamped by the IRB. Go to the Documents tab to download them.

NOTE: Translations of IRB approved study documents, including informed consent documents, into languages other than English must be submitted to HSRO for approval prior to use.

In conducting this study, you are required to follow the requirements listed in the Investigator Manual (HRP-103). The PI is attesting to take full responsibility for the conduct of the study with any approval.

All interventional non-treatment studies and non-interventional studies:

> You are required to use REDCap to track accruals to your study per the Enrollment Tracking Using REDCap policy. Information about the policy and the steps required to achieve compliance can be found here: Video on Step-by-Step Process and FAQs.

Should you have any questions, please contact: Meghan Stein, Sr. IRB Regulatory Analyst, (email: m.stein@miami.edu)

Appendix C

FLORIDA INTERNATIONAL UNIVERSITY

SUPPORT LETTER FROM FACILITY

Date: 7/5/2023

UHealth Pediatrics | UNIVERSITY OF MIAMI MILLER SCHOOL of MEDICINE

Francisco Brenes Ph.D., APRN-BC, FNP, PMHNP
Clinical Professor
Nicole Wertheim College of Nursing & Health Sciences
Florida International University

Dear Dr., Brenes,

Thank you for inviting the University of Miami Pediatric Allergy and Immunology Outpatient Clinic to participate in the DNP Project of Rebeca Sanchez. I understand that this student will be conducting this project as part of the requirements for the Doctor of Nursing Practice program at Florida International University. After reviewing the proposal of the project titled *"Knowledge Awareness of Body Image Impairment and Its Associated Mental Health Risk Factors in Pediatric Patients with Atopic Dermatitis Among Healthcare Providers in an Outpatient Allergy and Immunology Clinic in Miami, Florida: A Quality Improvement Project."* She has my full support and permission to conduct the project at this outpatient center.

We understand that the project will be developed in our setting and will occur throughout the course of one in person staff meeting and will probably be implemented afterward. We are also aware of our staff participation in supporting the student to complete this project, including granting the student access to our facilities, giving consent, delivery of the pre-test questionnaire, providing the educational intervention, and subsequently providing a posttest to the recruited participants. We will ensure a peaceful environment to safeguard our participant privacy as well as an adequate area to conduct the educational activity. The educational intervention will be in a meeting format and will last approximately 30 minutes in duration. All educational materials will be provided to each participant prior to the meeting.

This project will be conducted with the previous consent of potential participants who are employed at the facility. Prior to the implementation of this project, Florida International University Institutional Review Board will evaluate and approve the procedures to conduct this project. This project intends to evaluate if a structured education targeting providers and staff could increase knowledge awareness of body image impairment and other associated mental health risk factors in pediatric patients with atopic dermatitis. Increasing provider knowledge awareness of mental health screening of body image impairment and other associated mental health risk factors in pediatric patients with atopic dermatitis has the potential of improving patient healthcare indicators, reducing healthcare costs, and improving patient quality of life.

We expect that Rebeca Sanchez will not interfere with the normal daily operations of the facility and will present self in a professional manner that aligns with the facility's standards of care. As the Medical Director of the Pediatric Allergy and Immunology Clinic at the University of Miami Batchelor Children's Research Institute, I support the participation of our providers and staff in this project and look forward to working with you.

Pediatric Allergy and Immunology
P.O. Box 016960 (D4-4) | Miami, FL 33136
Ph: 305-243-6676 | Fax: 305-243-5562

Respectfully,

UHealth Pediatrics | UNIVERSITY OF MIAMI MILLER SCHOOL of MEDICINE

Dr. Gary I. Kleiner
Medical Director
University of Miami, Pediatric Allergy and Immunology
Batchelor Children's Research Institute.

Pediatric Allergy and Immunology
P.O. Box 016960 (D4-4) | Miami, FL 33136
Ph: 305-243-6676 | Fax: 305-243-5562

Appendix D

FLORIDA INTERNATIONAL UNIVERSITY

RECRUITMENT EMAIL

Dear Healthcare Provider,

My name is Rebeca Sanchez, and I am a student from the Graduate Nursing Department
at Florida International University, pursuing a Doctor of Nursing Practice (DNP) degree. I am writing to invite you to participate in my quality improvement project. The goal of this project is to increase knowledge awareness among healthcare providers in Miami, Florida, regarding body image impairment and associated mental health risk factors in pediatric patients with atopic dermatitis. You are eligible to take part in this project because you are healthcare provider at the *University of Miami Pediatric Allergy and Immunology Clinic*, and you provide or may provide care to youth in this clinic. I am contacting you with the permission of the *University of Miami* and the head of the clinic, *Dr. Gary Kleiner, MD, Ph.D.*

If you decide to participate in this project, you will be asked to complete a demographic questionnaire and pretest. You will then observe a PowerPoint presentation developed and presented by the researcher, lasting approximately 10 minutes in duration. After the presentation, you will be asked to complete a final posttest. Demographic questionnaire, pre- and posttest surveys are expected to take approximately 15-minutes to complete. All items will be completed on the same day. The demographic, pre- and posttest surveys, as well as the educational component are anticipated to take approximately 25-30 minutes in total.

Keep in mind, your participation in this project is entirely voluntary, and no compensation will be provided. If you decline to participate in this study, you do so free of repercussions and consequences. Participants may also revoke their consent at any given time during the project. If you would like to participate, please click on the link provided below to acknowledge consent and initiate the process as described above.

If you have any questions about the study, please reach out via email or phone using the contact information below. Thank you for your time.

Sincerely,

Rebeca Sanchez, MSN, APRN, PMHNP-BC
rsanc156@fiu.edu

Appendix E

FLORIDA INTERNATIONAL UNIVERSITY

RESEARCHER-DEVELOPED DEMOGRAPHIC INSTRUMENT

1. Please write your randomly assigned participant ID number:
   _____
2. What is your age?
   a. 18 to 29 years
   b. 30 to 44 years
   c. 45 years and older
3. What is your gender?
   a. Female
   b. Male
   c. Prefer not to say
4. What is your ethnicity?
   a. non-Hispanic White
   b. non-Hispanic
   c. Other
5. What is your highest level of education?
   a. Bachelor's degree (i.e., Bachelor of Science in Nursing)
   b. Master's degree (i.e., Master of Science in Nursing)
   c. Doctoral degree (i.e., Medical Doctor, Doctor of Osteopathic Medicine, Doctor of Nursing Practice; Doctor of Philosophy, Ph.D.)
6. What is your role within the outpatient allergy and immunology practice?
   a. Physician
   b. Nurse Practitioner
   c. Registered Nurse
7. How many years of clinical experience do you have?
   a. 0 to 1 year
   b. 2 to 3 years
   c. 4 years or more
8. How would you rate your current knowledge on body image impairment and mental health risk factors of pediatric patients with atopic dermatitis?
   a. Minimal
   b. Moderate
   c. Competent

Appendix F

FLORIDA INTERNATIONAL UNIVERSITY

MODIFIED BODY DYSMORPHIC DISORDER QUESTIONNAIRE-

DERMATOLOGY VERSION, COMPETENCY INSTRUMENT

1. *Patients with atopic conditions are concerned about the appearance of some part of their body.
    a. Strongly disagree
    b. Disagree
    c. Neither true/untrue
    d. Agree
    e. Strongly agree
    f. Don't know
2. *Pediatric patients with atopic conditions are preoccupied with concerns about some part of their body.
    a. Strongly disagree
    b. Disagree
    c. Neither true/untrue
    d. Agree
    e. Strongly agree
    f. Don't know
3. *Pediatric patients with atopic dermatitis have specific bothers about the appearance of their affected body parts.
    a. Strongly disagree
    b. Disagree
    c. Neither true/untrue
    d. Agree
    e. Strongly agree
    f. Don't know
4. *Pediatric patients with atopic dermatitis experience appearance preoccupation that affects their daily living.
    a. Strongly disagree
    b. Disagree
    c. Neither true/untrue
    d. Agree
    e. Strongly agree
    f. Don't know
5. *To what degree do you believe pediatric patients with atopic dermatitis experience increased levels of distress, torment, or pain?
    a. No distress
    b. Mild, and not too disturbing
    c. Moderate and disturbing but still manageable
    d. Severe, and very disturbing

    e. Extreme and disabling
    f. Don't know
6. *To what degree do you believe pediatric patients with atopic dermatitis experience impairment in social, educational, and other areas of functioning?
    a. No limitation
    b. Mild interference but overall performance not impaired
    c. Moderate, definite interference, but still manageable
    d. Severe, causes substantial impairment
    e. Extreme, incapacitating.
    f. Don't know
7. *Pediatric patients with atopic dermatitis experience body image impairment that significantly interferes with their socialization.
    a. Strongly disagree
    b. Disagree
    c. Neither true/untrue
    d. Agree
    e. Strongly agree
    f. Don't know
8. *Pediatric patients with atopic dermatitis experience body image impairment that significantly interferes with their schoolwork and their ability to function in their role.
    a. Strongly disagree
    b. Disagree
    c. Neither true/untrue
    d. Agree
    e. Strongly agree
    f. Don't know
9. *Pediatric patients with atopic dermatitis avoid certain activities/experiences because of their impaired body image.
    a. Strongly disagree
    b. Disagree
    c. Neither true/untrue
    d. Agree
    e. Strongly agree
    f. Don't know
10. Pediatric patients with atopic dermatitis prone to mental health risk factors.
    a. Strongly disagree
    b. Disagree
    c. Neither true/untrue
    d. Agree
    e. Strongly agree
    f. Don't know
11. Mental health risk factors lead to poor quality of life in pediatric patients with atopic dermatitis.
    a. Strongly disagree
    b. Disagree

    c. Neither true/untrue
    d. Agree
    e. Strongly agree
    f. Don't know
12. It is important to screen for body image impairment and other mental health risk factors in pediatric patients with atopic dermatitis
    a. Strongly disagree
    b. Disagree
    c. Neither true/untrue
    d. Agree
    e. Strongly agree
    f. Don't know
13. I should inquire about body image impairment and other mental health risk factors in pediatric patients with atopic dermatitis.
    a. Strongly disagree
    b. Disagree
    c. Neither true/untrue
    d. Agree
    e. Strongly agree
    f. Don't know

*=reverse coded

Appendix G

FLORIDA INTERNATIONAL UNIVERSITY

CITI ETHICS CERTIFICATION

CITI PROGRAM

Completion Date 12-Jun-2023
Expiration Date 12-Jun-2026
Record ID 56289007

This is to certify that:

Rebeca Sanchez

Not valid for renewal of certification through CME.

Has completed the following CITI Program course:

Basic/Refresher Course - Human Subjects Research
(Curriculum Group)
Social/Behavioral Human Research Course
(Course Learner Group)
3 - Refresher Course
(Stage)

Under requirements set by:

Florida International University

CITI
Collaborative Institutional Training Initiative

101 NE 3rd Avenue, Suite 320
Fort Lauderdale, FL 33301 US
www.citiprogram.org

Verify at www.citiprogram.org/verify/?w93594ffe-248f-480c-b9bf-246d40a6d0d7-56289007

Appendix H

FLORIDA INTERNATIONAL UNIVERSITY

CV

2017	BSN, Florida International University, Miami, FL
2017 - 2020	Registered Nurse, Nicklaus Children's Hospital, Miami, FL
2020 - 2022	Registered Nurse, Clementine Programs, Miami, FL
2022	MSN, Florida International University, Miami, FL
2023 - Present	Adjunct Clinical Lecturer, Undergraduate Nursing, Florida International University, Miami, FL
2023 - Present	Psychiatric-Mental Health Nurse Practitioner, South Florida Psychiatry, Miami, FL
2023	DNP, Florida International University, Miami, FL