# Evaluating Quality of Life Burdens on Pediatric Patients with Vitiligo and Improving

#### Access to Mental Health Care

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#### Abstract

Vitiligo is an unpredictable and chronic autoimmune skin disease that results in depigmented areas of skin. Fifty percent of patients are diagnosed before the age of 20; therefore, children carry a significant burden of the disease. Due to its visible nature, patients with vitiligo have an increased risk of mental health burdens, including diminished quality of life (QoL), and children are not an exception. In pediatrics, these outcomes may manifest in interpersonal relationships, school attendance, clothing choices, and embarrassment. Unfortunately, pediatric patients with vitiligo are not regularly screened for the effects of their disease on QoL, and wait times for pediatric mental health providers are lengthy and can be a barrier to needed care. A quality improvement project using a validated screening tool, the Children's Dermatology Life Quality Index (CDLQI) was integrated into routine care for pediatric patients with vitiligo. Seventy-four pediatric patients with vitiligo between the ages of 4 and 17 years were evaluated at an outpatient pediatric dermatology clinic. Forty-four patients (59.5%) completed the CDLQI. Four patients showed a moderate or large effect on their quality of life. Two patients accepted additional interventions, including a referral to a pediatric psychologist. Their average wait time was 2.1 months. The CDLQI is an effective tool in quickly evaluating the impact of vitiligo on pediatric patients' QoL. The tool can be easily integrated into normal clinic workflow, minimizing disruptions, and can be used to identify patients at-risk for mental health burdens. At-risk patients can be referred to a mental health provider. Developing a sustainable connection between a mental health provider and a pediatric dermatology clinic can be an effective tool in improving access to mental health care.

Keywords: vitiligo, pediatrics, quality of life, mental health, screening

# Evaluating Quality of Life Burdens on Pediatric Patients with Vitiligo and Improving Access to Mental Health Care

#### **Background and Significance to Healthcare**

Vitiligo is a chronic autoimmune condition in which the immune system destroys the melanocytes in the skin causing areas of depigmentation (Paller & Mancini, 2022). This disease can occur anywhere on the body and in any age group. Half of those diagnosed with the condition are under the age of 20 (Paller & Mancini, 2022). The condition has an unpredictable prognosis, and treatments are slow and limited (Paller & Mancini, 2022). Patients with vitiligo experience psychological comorbidities associated with the alterations in their skin's appearance and the inability to hide it from peers (Erdoğan et al., 2020; Nathalie et al., 2021). School-age children are especially at-risk due to their psychosocial development and the importance of peer relationships during this time (Moss et al., 2022; Onen et al., 2019; Uzuc et al., 2021). When providers only focus on pharmacologic treatments for vitiligo, they fail to recognize the psychological impact of the disease on pediatric patients. Acknowledging mental health burdens through valid and reliable screening tools can promote early identification, intervention, and positive outcomes (Olsen, et al., 2016).

In the last three years in an outpatient pediatric dermatology clinic at a large urban children's hospital in Ohio, 247 unique patients were diagnosed with vitiligo. Patients age at diagnosis ranged from 0 year to 22 years, and 239 of the patients were under the age of 17 years. The following categorizes patients within specific age ranges: 32 toddlers (1-3 years), 63 young school-age children (4-7 years), 81 pre-adolescents (8-12 years), and 63 adolescents (13-17 years). Of the 247 patients, 65 (26.3%) had documented referrals to behavior and mental health within the hospital system. Only one of those patients was referred by a pediatric dermatology

provider. Fifteen of the 65 patients completed a first visit with a behavioral health provider within the hospital system and were given a mental health diagnosis. The one patient referred by a dermatology provider did not complete a behavioral health visit. The average wait time from referral to first appointment was 9.3 months. Behavioral and mental health diagnoses included adjustment disorder with depressive symptoms (2), disruptive behavior and conduct disorder (5), general anxiety disorder (6), social anxiety (2), social phobia (2), separation anxiety (1), depression (1), and attention-deficit/hyperactivity disorder (6). A relationship between vitiligo and the mental health diagnosis could not be determined based on the data analysis. The data does show that 6% of pediatric patients with vitiligo were diagnosed with a mental health diagnosis in the last three years. However, none of these patients were referred by a pediatric dermatology provider. This data highlights a potential area for improvement in care for pediatric patients with vitiligo within the dermatology clinic. Long wait times could have inhibited patients from completing a first visit with a mental health provider. Improving access to care represents an additional opportunity to enhance patient outcomes.

#### **Problem Statement and Purpose**

The pediatric dermatology clinic within the hospital previously lacked a modality to proactively screen pediatric patients with vitiligo for psychological burden. At-risk patients were identified through self-report or family member concerns. The process triggered a referral to the hospital's behavioral health department, but it represented a lengthy wait time of over six months. Patients were not appropriately offered necessary or timely mental health resources, such as an appointment with a mental health provider. This DNP project aimed to address this care gap. Pediatric patients with vitiligo in the pediatric dermatology clinic completed the Children's Dermatology Life Quality Index (CDLQI) during their clinical visit, and those identified with elevated risks were referred to a mental health provider within the hospital system. The goal was to improve earlier identification of psychiatric symptoms in patients with vitiligo, connections with psychological interventions when needed, and potential improvement in quality of life (QoL). The project also had the potential for larger impacts, such as enhancing collaboration between the dermatology and mental health departments, paving the way for expansion to other clinical diagnoses. Finally, it could highlight the need for dermatology-focused mental health providers. The following PICOT question guided the project: Are schoolage and adolescent patients with vitiligo (P) who complete the CDLQI (I) compared to those who are not evaluated with the CDLQI (C) referred to a mental health provider more frequently (O) over six months (T)?

#### **Review of Literature**

#### **Literature Review Methods**

The literature review started with an extensive search of the current literature. Several search engines were used to find pertinent research articles, including CINAHL, MEDLINE, PsychInfo, and PubMed. The Cochrane Library was used for systematic reviews. In the searches, keyword variations were utilized to ensure access to pertinent publications. For the age group, pediatric, child, children, or adolescent were selected. To refer to vitiligo, vitiligo or pigment disorder were searched. For psychosocial burdens, depression, QoL, anxiety, psychologic, or psychiatric were chosen. For interventions, cognitive therapy, cognitive behavioral therapy, or therapy were included. The articles' references were reviewed to identify additional relevant literature that were missed in the original search. Finally, appropriate organizations were explored for clinical guidelines, such as the National Institute of Health, American Academy of Dermatology, Society of Pediatric Dermatology, and British Association of Dermatologists.

Over thirty articles were found that fit the parameters. Articles included quantitative studies, a qualitative study, systematic reviews, meta-analyses, and one management guideline. Next, articles were excluded that were over seven years old except for two pivotal studies, which were published ten and twelve years ago. Studies with vitiligo and children were the focus of the selected articles. Due to the paucity of literature on pediatric patients, adult-focused articles were retained when necessary to help fill gaps and provide additional insights. Selected articles included two review articles, one guideline, four systematic reviews or meta-analyses, eleven quantitative studies, and one qualitative study.

#### **Key Themes**

#### Mental Health Burdens

The literature supported an impact of vitiligo on psychological outcomes in pediatric patients. Pediatric patients with vitiligo experienced greater psychiatric burdens with prolonged impacts on their daily lives (Moss et al., 2022; Onen et al., 2019; Uzuc et al., 2021). However, the findings represented many potential psychiatric diagnoses and symptoms, and the degree of impact was not clear. Two mental health diagnoses that the literature focused on directly were depression and anxiety.

The literature supported an increased risk of depression in pediatric patients with vitiligo (Erdogan et al., 2020; Osinubi et al., 2018; Vallerand et al., 2019). Younger children were more susceptible than older children, such as adolescents (Biglic et al., 2011). However, some studies contradicted these claims, finding no correlation between vitiligo and depression (Onec et al., 2019; Uzuc et al., 2021). The literature with children was limited, and some of the studies included adults. Additional studies would be beneficial to clarify influential factors, causality, and clearer relationships between vitiligo and depression.

Fewer studies specifically addressed anxiety. The existing literature reflected a similar pattern of patient outcomes as those that reported depression. Studies evaluating pediatric patients with vitiligo seven to eighteen years of age reported a greater degree of anxiety, especially regarding social phobia and separation anxiety (Erdoğan et al., 2020; Osinubi et al., 2018; Uzuc et al., 2018). However, two studies reported no correlation between the two variables (Biglic et al., 2011; Onen et al., 2019). There was a paucity of data focused strictly on anxiety and even fewer studies addressing children. The literature was contradictory, and no study established causality. Further studies should seek to establish incidence and correlation between vitiligo and anxiety in children.

#### Impact on Quality of Life

The impact of QoL in pediatric patients with vitiligo was the most studied outcome. Assessment tools incorporated an array of varying domains. For example, the CDLQI evaluated disease symptoms, emotions, clothing, relationships, sleep loss, leisure, sports, treatment, friendship, and school (Dertliogu et al., 2013; Dev et al., 2022; Moss et al., 2020; Onen et al., 2019). The Pediatric Quality of Life Index assessed five domains, including physical, emotional, psychosocial, social, and school functioning (Onen et al., 2019). The Vitiligo-Specific Quality of Life Instrument was a vitiligo specific instrument that addresses participation, stigma, and behavior (Hedayat et al., 2016). As with depression and anxiety, studies concerning QoL showed conflicting evidence. Earlier studies reported that children with vitiligo score significantly lower in QoL than controls (Dertliogu et al., 2013; Onen et al., 2019). A meta-analysis from the United Kingdom (UK) that evaluated the impact of QoL on a range of childhood dermatologic conditions, including vitiligo, also supported these findings; however, pediatric patients with vitiligo experience a smaller effect on overall QoL than other conditions, such as atopic dermatitis and acne (Olsen et al., 2016). More recent literature contradicted these initial results, showing minimal or no significant difference in QoL in the target population compared to controls or pediatric patients with other dermatologic diseases (Dev et al.; 2022; Erdogan et al., 2020; Nathalie et al., 2021; Uzuc et al., 2021).

QoL domain outcomes depended on the study. Psychological effects such as embarrassment and clothing choices to cover areas were greatly impacted by vitiligo in children (Boza et al., 2016; Dertliogu et al., 2013; Dev et al., 2022; Nathalie et al., 2021; Onen et al. 2019). Social domains indicated elevated experiences of teasing, bullying, and diminished friendships (Boza et al., 2016; Dertliogu et al., 2013; Onen et al., 2019). While involvement in leisure and sports activities were impacted, evidence on school outcomes varied. (Boza et al., 2016; Dertliogu et al., 2013). Children with vitiligo had a greater preference for school avoidance and impact on schoolwork, including difficulty concentrating, but one study failed to see a correlation between vitiligo and school attendance (Boza et al., 2016; Dertliogu et al., 2013; Nathalie et al., 2021; Onen et al., 2019). Vitiligo did not significantly impact children's ability to sleep (Boza et al., 2016; Nathalie et al., 2021).

The literature showed varying impacts on QoL. Many of the studies used different assessment tools, delineating various domains and making direct comparison between studies difficult. When parent tools were utilized, caregivers evaluated their child worse compared to the child's self-evaluation (Onen et al., 2019). Like depression and anxiety, a definitive conclusion was not apparent in the evidence, especially regarding overall QoL. However, there was enough evidence to support the impact of vitiligo on QoL in some children, especially in specific domains like psychological and social functioning.

#### **Clinical Variables**

Clinical factors represented independent variables in many of the studies. Factors included disease severity and location. Severity, or extent of involvement, was determined by body surface area involvement or the Vitiligo Area Scoring Index (Biglic et al.; 2011; Erdogan et al., 2020; Hedayat et al., 2016; Onen et al., 2019). Vitiligo severity did not significantly impact depression or anxiety (Biglic et al.; 2011; Onen et al., 2019). Vitiligo severity had a positive correlation with overall QoL scores in children and adolescents (Biglic et al., 2011; Dertliogu et al., 2013; Dev et al., 2022; Hedayat et al., 2016; Nathalie et al., 2021). Two studies opposed this influence and showed no correlation between severity and QoL (Boza et al., 2016; Uzuc et al., 2021). Adolescents and females were at greatest risk for effects on QoL and fared worse than younger children and males in the category of severity (Biglic et al., 2011; Dev et al., 2022).

The location of vitiligo represented another independent variable with the potential to affect mental health outcomes. Similar to severity, location did not increase the risk of depression or anxiety in pediatric patients with vitiligo (Biglic et al., 2016; Uzuc et al., 2021). Certain locations such as arms, legs, and face correlated with greater negative effects on QoL, especially in adolescents (Biglic et al., 2011; Dertliogu et al., 2013; Nathalie et al., 2016). Sex also represented a confounding factor. Males with vitiligo on the face, head, or neck experienced a decrease in QoL, compared to females who were more affected by involvement of the feet and genitalia (Biglic et al., 2011; Dertliogu et al., 2013). Two studies did not support a relationship between vitiligo location on QoL (Boza et al., 2016; Hedayat et al. 2016).

According to the literature, severity and location did not significantly increase the risk of anxiety or depression, but the evidence was limited. Differences in severity ranges and location presentations impacted study outcomes. However, both factors affected QoL in certain patients.

Providers should be aware of risks and consider these characteristics when addressing psychosocial outcomes.

#### Resilience

Another theme inherent in the literature was resiliency factors. Older age, prolonged or limited disease, patients and parents with higher education, and greater disease knowledge represented possible protective factors (Biglic et al., 2011; Boza et al., 2016; Hedayat et al., 2016; Moss et al., 2020). For example, a positive correlation was reported between child's age and QoL scores (Boza et al., 2016). Parents also played an important role in a child's acceptance. Children mirror their parents' attitudes, and support and acceptance projected by caregivers improved child coping skills (Moss et al., 2020). Other mechanisms for children included avoidance, individual personality differences, and additional social supports (Moss et al., 2020). Patient experience is unique, and the presence or absence of some of these factors may have led to differences in outcomes, including those reported earlier in this literature review.

#### Interventions

The literature used a variety of tools to assess psychological burdens and QoL in pediatric patients with vitiligo. While all are valid and reliable questionnaires, each contained a different line of inquiries and subdomains. The Children's Depression Index, the State-Trait Anxiety Index for Children, and Pediatric Quality of Life Inventory, and the CDLQI represented the most prevalent tools for depression, anxiety, and QoL, respectively, but many more were included in the literature (Bilgic et al., 2011; Boza et al., 2016; Dertliogu et al., 2013; Dev et al., 2022; Erdogan et al., 2020; Hedayat et al., 2016; Onen et al., 2019; Nathalie et al., 2021; Uzuc et al., 2021; Zambare et al., 2021). Unfortunately, none of the articles critiqued, ranked, or provided a consensus on the best assessment tools, leading to further ambiguity on their use and application

in children with vitiligo (Eleftheriadou et al., 2022; Osinubi et al., 2018; Russell et al., 2021). A consensus recommendation would be beneficial to help guide tool selection and represents an opportunity for additional research.

Health-related QoL (HRQOL) tools are useful in the early identification of psychological, depressive, and anxiety symptoms for at-risk patients and referrals to behavioral health resources (Goldstein-Leever et al., 2019). The CDLQI (see Appendix A) was the only dermatology focused pediatric HRQOL tool validated for ages 4 to 16 years and was the most frequently utilized tool in the current literature. It was derived from the adult version – the Dermatology Life Quality Index (DLQI), which was validated for individuals 16 years and older and takes one to three minutes to complete (Lewis & Finlay, 2004). For those ages 16 and 17 years, scores on the CDLQI and DLQI were similar (Geel et al., 2016). The CDLQI and DLQI measured the impact of skin disease on mental health and were the most common tools utilized for this purpose (Olsen et al. 2016; Salek et al., 2013). The Skindex and VitiQOL are other valid and reliable dermatology and vitiligo-focused QoL tools but were only used in adults (Rogers et al., 2012).

The CDLQI and DLQI have been used on a variety of skin diseases, including vitiligo (Lewis & Finlay, 2004; Olsen et al., 2016). The tools were first developed for clinical research, but their utilization expanded (Olsen et al. 2016). Established stratified severity bands for both assessments allow providers to gauge the impact of skin disease on mental health, guide dermatologic clinical treatment, and highlight the need for mental health intervention (Hongbo et al., 2005; Olsen et al., 2016). Patients with results in the high and extremely high bands, for example, warrant both interventions (Hongbo et al., 2005; Olsen et al., 2016). Although there are pediatric depression and anxiety screening tools, none integrated the impact of skin disease on

mental health burdens. Evidence supported the internal consistency, validity, and sensitivity to change of the CDLQI and DLQI in skin disease; the DLQI carried the majority of the evidence (Lewis-Jones & Finlay, 1995; Lewis & Finlay, 2004; Olsen et al. 2016; Rogers et al., 2012; Salek et al., 2013). Various versions of the tools showed similar attributes, including those in diverse languages, electronic forms, and the cartoon version geared toward younger children (Ali et al., 2017; Basra et al., 2008; Salek et al., 2013). The bulk of these studies referenced more common skin diseases, such as atopic dermatitis, acne, and psoriasis. Therefore, a paucity of evidence existed evaluating its use in vitiligo, specifically.

Current published guidelines for the management of vitiligo were absent in literature from the United States (US). Eleftheriadou et al. (2022) from the UK recommended with "strong evidence" the assessment and monitoring of QoL and psychological distress in all patients with vitiligo, including children. However, there was a gap between recommendations and practice (Chen & Schmidt, 2021). Although most dermatologic providers acknowledged assessment as important, they failed to offer a validated screening tool to all patients, regardless of their diagnosis, yet recognition of at-risk patients positively correlated with screening frequency (Chen & Schmidt, 2021; Zambare et al., 2021). Barriers to implementation included time constraints, lack of knowledge, appropriate assessments, and tool accessibility (Chen & Schmidt, 2021).

The UK guidelines recommended with "strong evidence" offering information for those with "mild" distress as noted through evaluation. They recommended referral to mental health providers for those with moderate to severe stress (Eleftheriadou et al., 2022). Cognitive behavioral therapy (CBT) significantly improved mental health and overall QoL in adults with vitiligo, improved disease severity, and sustained improvement for several months (Cadmus et

al., 2018; Revankar et al., 2022). Self-help education and support groups significantly reduced anxiety in adults (Cadmus et al., 2018; Revankar et al., 2022). Support groups also significantly improved QoL outcomes for children with atopic dermatitis, but no evidence existed regarding children with vitiligo (Cadmus et al., 2018). Barriers to interventions included time constraints, access to resources, and trained providers (Cadmus et al., 2018; Revankar et al., 2022). Limitations to the systematic reviews were the inclusion of studies with small sample sizes and lack of pediatric representation (Cadmus et al., 2018; Revankar et al., 2022). None of the evidence for vitiligo were pediatric-focused, and only one study included patients 12 years and older (Cadmus, et al., 2018; Revankar et al., 2022). Future research needs to focus on effective mental health interventions for pediatric patients with vitiligo.

#### **Evaluation of strength of evidence**

The evidence revealed a significant impact in some pediatric patients with vitiligo that warrants regular screening of all patients as well as education and referral when appropriate. However, the literature review highlighted the absence or contradictory nature of the current evidence in many important areas. Pediatric-focused studies were few and often included small sample sizes, diminishing their power, and many studies originated from outside of the US. A wide and varying range of patient presentations influenced the individual studies. Therefore, systematic reviews and meta-analyses may be more useful in developing recommendations. The literature does not make clear recommendations on which screening tools to use, and although the CDLQI and DLQI are valid and reliable tools to evaluate QoL in dermatologic patients, their meaningfulness in vitiligo has not been directly studied. Support must be derived from studies on other skin diseases, such as atopic dermatitis and acne. Future research should focus on vitiligo outcomes, comparison of screening tools, and effective interventions for pediatric patients.

#### Framework

Pender's Health Promotion Model (HPM) delineates factors that affect health outcomes and direct nurses toward interventions based upon these factors (Pender, 2011). The HPM originated in 1983 and was most recently modified in 2002. The theory considers the multifactorial influences of interpersonal and physical environments on personal health (Masters, 2015). According to Pender, unique personal characteristics, experiences, and perceptions affect health promotion motivation (Gonzola, 2023). Nurses can address these variables to improve desired health behaviors and outcomes (Gonzola, 2023).

However, the theory cannot act alone. The HPM is founded on several key assumptions, including the interplay between human and environmental factors (Pender, 2011). Examples include the human capacity and drive for self-awareness and self-regulation of behavior. It assumes individuals valued supportive environments that facilitated their unique health and growth in areas perceived as positive and balanced. The HPM acknowledges the reciprocal interaction and influence between humans and the environment. Healthcare professionals are one factor in the environment that impact individuals throughout their lives. Finally, the HPM assumes behavior change could only arise when a self-initiated balance occurred between personal and environmental interactions.

Pender utilizes these assumptions to describe and build relationships between the three main concepts of the HPM: individual attributes, behavior-specific cognitions and affect, and health promoting behavioral outcomes (Pender, 2011). She defines individual attributes as personal characteristics and previous health behaviors or experiences that impacted current and future health decisions (Pender, 2011). Characteristics include biological, psychological, and sociocultural factors such as age, personality, race, and socioeconomic status. These factors

influence an individual's behavior-specific cognitions and affect such as perceptions of benefits and barriers, self-efficacy, and interpersonal and situational influences towards health-related actions. The concept also includes personal attitudes and emotions surrounding the behavior, intent to commit to the health decision, and current competing demands and preferences that may distract from a behavior. Together, they directly affect the final concept and desired outcome – the health promoting behavior. According to Pender (2011), nurses should intervene by addressing these influences and barriers to improve health outcomes.

Pender (2011) lends three main concepts of HPM to additional theoretical propositions. For example, perceived self-efficacy and benefits from an action improves the performance of a health behavior and commitment to it, while perceived barriers limit the action, its mediators, and commitment level. Furthermore, when an individual associates a positive effect to a health behavior, commitment, action, and perceptions of self-efficacy increases, which then decreases perceived barriers. Interpersonal relationships also positively or negatively affected health outcomes. The probability of action toward a health behavior is greater when influential persons such as family, friends, and healthcare professionals support, model, or anticipate the desired health behavior. Environmental stressors and circumstances can similarly influence commitment and engagement. Commitment is another strong factor influencing success in the HPM. While there is a positive correlation between commitment and action, there is a negative correlation between external factors that are demanding or distracting. Lastly, Pender (2011) suggests that individuals may manipulate their perceptions, emotions, and outside influences to incentivize desired health outcomes.

#### **Theory Appraisal**

Pender's HPM includes multiple appealing characteristics. The most important is the theory's acknowledgement of the diverse influential factors that impact an individual's decision to pursue a desirable health behavior (Pender, 2011). Pender not only includes a patient's demographics but also their history and experiences. Pender's holistic approach is important because it recognizes that a person's past can affect their perception of a current situation or a future choice. The current situation should not be viewed through a vacuum. Pender (2011) also includes personal emotions, self-efficacy, and relationships in her influential contributors to a health outcome. These factors are significant because they directly influence an individual's belief in personal successful. Opinions from significant others, family, friends, and healthcare providers are important as they provide needed support or can discourage an individual.

Another appealing characteristic of the HPM is its utilization in care plans. Pender outlines important factors to consider when discussing managing disease processes. The process helps unearth potential barriers to a health goal, which if addressed, increases opportunities for successful care. It also provides avenues for exploration when health outcomes are not achieved, which is important because it acknowledges the complexities of an individual while providing a nursing approach to care that may be missed by other disciplines. Directly asking patients and families about these dynamics helps guide conversations and addresses needs and inhibitions with the goal of completing treatment.

Although Pender's HPM is applicable overall, there are some inherent weaknesses to the theory. One weakness is its emphasis on health promotion and prevention that fail to address concerns during an active disease state (Gonzalo, 2023). Different health outcomes need to be considered, but the foundation of Pender's theory are still applicable. Another weakness is its failure to consider personality differences that affect health behaviors. The theory assumes

individuals seek improvement in their current state and condition; however, not all persons have the same motivation. Finally, healthcare providers may have difficulty incorporating all of Pender's proposed factors in a timely manner. This limits its full applicability in a clinical setting.

#### **Application to the DNP Project**

The cornerstones of the HPM are evident in doctoral-level nursing practice. According to the American Association of Colleges of Nursing (AACN) (2021), the discipline of nursing includes approaching the individual, considering the continuous interactions between human behavior, the environment, and life events, as well as promoting positive changes in health. The first domain of advanced-level nursing education "Knowledge for Nursing Practice" stresses the application of theories from nursing and other disciplines into practice (AACN, 2021). Pender's theory encapsulates these foci of nursing and the DNP by integrating the influences of environment, behavioral, and social factors on health behaviors, commitment, and action (Pender, 2011).

Pender's HPM was also apparent in this DNP project. Although the theory was developed for individual patients, it was applied to an organization in an outpatient clinic. The DNP project focused on identifying pediatric patients with vitiligo who experience QoL burdens. They were also connected to a mental health provider when appropriate. The DNP student needed to consider the clinic and staff's ability to meet these needs. Therefore, the project addressed many of the same attributes Pender described in her theory but on a broader level. The attributes included the department's background, environment, stakeholders, and staff belief in and commitment to change. When considering the DNP project on a more granular level, similar factors were evaluated for the individual, including a patient's history, connections, emotions, and social influences regarding vitiligo and QoL. The desired health outcome, improved mental health, were kept in focus. Therefore, barriers to mental health evaluations were addressed, including connections to and acceptance of resources for the individual patient and the department.

#### **Project Plan and Methodology**

#### **Objectives, Aims, and Outcomes**

This DNP project focused on two main aims. The first was to increase the identification of pediatric patients with vitiligo at-risk for mental health burdens, specifically diminished QoL. The second was to improve access to resources for at-risk patients by decreasing the wait time from referral to first appointment with a mental health provider. To address these aims, the DNP student developed the following four objectives:

- 1. Increase the number of new pediatric patients with vitiligo who complete the CDLQI at their initial visit in the pediatric dermatology clinic by 90% in six months.
- 2. Increase the number of established pediatric patients with vitiligo who complete the CDLQI annually in the pediatric dermatology clinic by 90% in six months.
- 3. Increase the number of referrals for pediatric patients with vitiligo to a mental health provider at pediatric dermatology clinic by 50% in six months.
- Decrease the length of time to first mental health appointment after referral for pediatric patients with vitiligo identified as at-risk for negative mental health outcomes by 50% in six months.

These represented the short-term outcomes for the project. These included a greater number of pediatric patients with vitiligo that completed the CDLQI in clinic as well as more referrals and shorter wait times to see a mental health provider. Long-term outcomes were not assessed due to

the time constraints of the project. Enhancing QoL as noted through lower CDLQI scores at follow-up visits represented the primary goal that will be evaluated past the parameters of the DNP project.

#### **Project Design**

The DNP project utilized a quality improvement (QI) design. For this QI project, the DNP student utilized the Six Sigma structure. A diverse and expert team is integral to the model (Terhaar, 2021). The team and leader collaborate to complete the Six Sigma steps, which include define, measure, analyze, improve, and control (Terhaar, 2021). First, the team develops clear aims, indicators, and plans (Thakur et al., 2022). Then, they gather and analyze current data on the area of interest, which is used to identify root causes of the care gap and areas of improvement (Terhaar, 2021; Thakur et al., 2022). Next, the team discusses potential solutions, implements an intervention, and monitors the effect of the change (Terhaar, 2021). Once team members evaluate outcomes, they can decide to formalize the change and consider other potential interventions to promote continuous quality improvement (Thakur et al., 2022). Furthermore, the QI leader and team must simultaneously consider the chosen model as well as stakeholders, strengths, and barriers to enhance project success (North Dakota Center for Nursing, 2014).

#### Setting and Sample

The DNP project was completed within the pediatric dermatology clinic at a large urban hospital in Ohio. Since care for pediatric patients with vitiligo is dispersed among all dermatology clinics, the project affected the entire clinic, including nursing staff and providers. It included visits at the department's main office as well as offsite locations. The project began July 1, 2024, upon completion and approval from the hospital and Kent State University institutional review boards (IRB) (see Appendices C and D), and data collection continued through December 31, 2024, which allowed for six months of accumulated data. Screening will persist as long as the project shows positive results. Although pediatrics is defined by the American Academy of Pediatrics as infancy to 21 years of age, for the purpose of this project, only children between 4 to 17 years of age were represented (Hardin et al., 2017). The sample included all new and established pediatric patients with vitiligo ages 4 to 17 years.

#### Intervention

The CDLQI utilized ten questions to evaluate the impact of skin disease, including vitiligo, on pediatric patients' QoL (Lewis-Jones & Finlay, 1995). Subdomains represented in the tool were disease symptoms, embarrassment, friendship, clothing, activities, school, bullying, sleep, and treatment (Lewis-Jones & Finlay, 1995). The tool was validated for children between 4 and 16 years of age; however, for those 16 and 17 years, the CDLQI also proved reliable (Geel, et al., 2016). The patient rather than the parents responded to the questions as directed by the questionnaire, although parents were able to read the items for younger children (Salek et al., 2013). The child rated each item as "Not at all," "Only a little," "Quite a lot," or "Very much." Each of the ratings correlated to a value of 0, 1, 2, or 3, respectively (Salek et al., 2013). Tabulated scores fell into one of the CDLQI severity stratification bands with 0-1 showing no effect on QoL; 2-6, a small effect; 7-12, a moderate effect; 13-18, a very large effect; and 19-30, an extremely large effect (Waters et al., 2010). The tool showed good internal consistency, testretest reliability, responsiveness to change, cross-validation, criterion validity, and construct validity (Salek et al., 2013). Additionally, the cartoon version and language translations met the same standards; however, cultural differences may influence responses and should be taken into consideration (Salek et al., 2013). Research on the minimum clinically important difference in

scoring and dimensionality was lacking for the CDLQI, and further investigation in these areas may strengthen tool use (Salek et al., 2013).

## **Implementation plan**

#### **Building the Foundation**

To lay the foundations for the project, the DNP student followed the Six Sigma design. First, an expert team of stakeholders was established, including a dermatology physician, nursing staff, mental health provider, and financial and information services (IS) specialists. Together, the team evaluated current processes and potential assessment tools, and they brainstormed potential changes to the processes that fit with department values and constructs. The team selected the screening tool, the CDLQI, and discussed ways to effectively integrate it into the clinic workflow. IS requests were submitted by the DNP student to develop the tools within the electronic medical record (EMR) and connect it to the dermatology clinic profile. Once this was completed, the DNP student educated department staff during a monthly department meeting on the project's goals, plan, and outcomes.

#### **Implementation**

The next step of the Six Sigma Design was to implement the change (see Appendix B). The change was implemented during patient clinic visits (Figures 1 and 2).

### Figure 1



#### New or Established Vitiligo Patient CDLQI Integration Clinic Workflow

# Figure 2

New Vitiligo Diagnosis during Patient Visit and CDLQI Integration Clinic Workflow



If a patient had a referral diagnosis of vitiligo or a previous vitiligo diagnosis and had not completed the CDLQI within the last year, a "Best Practice Advisory" (BPA) flag appeared in the rooming requirements for the nursing staff. If a patient had a flag on their chart, the nurse utilized a clinic iPad to load the CDLQI through the patient's chart. The nurse also educated the patient and family on how to complete the tool. The patient completed the CDLQI while waiting for a provider. The screening was only available in English. If another language was required, an interpreter helped complete the questionnaire. Once completed, the CDLQI and its scoring automatically loaded into the specialty forms within the patient's chart on the EMR. This process made it accessible to nurses and providers. Providers evaluated the score before entering the patient's room and discussed results during the visit. The provider also added the results to their clinic notes using a specialized smartphrase or dropdown feature in the note.

Patients newly diagnosed with vitiligo during the clinic visit also needed a pathway to complete the CDLQI. In this instance, nurses initiated the screening tool and patient education after the provider encounter was complete. Providers triggered the process by communicating with the nursing staff and entering the "vitiligo" diagnosis into the chart. Once entered, the BPA flag appeared in the patient's chart. Providers evaluated the results, returned to the patient room, and followed the previously outlined workflow.

CDLQI scores guided the next steps. Scores fell into one of five severity stratifications. Patients with no (0-1) or small (2-6) effect did not need additional interventions. For patients with a moderate (7-12) effect, providers offered a referral to a mental health provider, such as the dermatology clinic's pediatric psychologist. If refused, the provider and family may have chosen to provide additional education and repeated screening at next dermatology clinic appointment. For patients with a large (13-18) or a very large (19-30) effect, providers recommended a referral to a mental health provider, the pediatric psychologist. Families could decline the referral if they preferred.

#### **Interprofessional Collaboration**

A robust interprofessional team was necessary to be successful on this project, which fits within "Domain 6: Interprofessional Practice" from the AACN (2021). Essential members of the team included the DNP student as team leader, physician and nursing departmental staff, a

mental health provider, an IS representative, and a financial reimbursement specialist. Each member filled a valued project need (Moran, 2019). From within the dermatology department, nursing and physician expertise helped direct project workflows, evaluate patient and departmental response, address barriers, and promote departmental buy-in. The CLDQI was chosen as the screening tool through collaborative discussions with the mental health provider, a pediatric psychologist. Collaboration allowed for a referral pathway that decreased wait time. Previously, the pediatric psychologist reported a wait time of one month or less. A financial expert directed the team not to charge for the assessment to avoid barriers to access. Finally, the IS representatives integrated the assessment, results, charges, and referral workflow into the EMR. Their efforts provided a basis for the project's measurable outcomes, as well.

No one team member could complete the project alone due to its many facets. Therefore, collaboration represented a necessary foundational characteristic of the group. According to Conrad (2019), collaboration means productively working together towards a common goal. Each member needed to appreciate the contributions and expertise of the others to promote positive dialogue and problem solving (Conrad, 2019). Together, the team developed project plans, obtained buy-in from other stakeholders, addressed complications, and created workflows for the project.

#### Gaining Buy-In

Stakeholder and team member buy-in was also vital to the project's success. To gain buyin, the DNP student presented the detailed project plan to the team as well as department, hospital, and nursing leadership. Initial meetings were completed with all members of the group, addressing program perceptions and potential role involvement. In these conversations, the program's position within the hospital's mission and values was emphasized. For example, within the hospital system, pediatric mental healthcare has been elevated to a position of high priority. In 2018, the hospital launched a national campaign, to diminish stigma associated with mental health and enhance access to resources for all children (NCH, n.d.-a). Pediatric behavior and mental health were also named as pinnacle strategies in the 2021-2026 organizational strategic plan (NCH, n.d.-b). Moreover, the pediatric dermatology clinic is focused on providing optimal dermatologic care for pediatric patients. Therefore, the DNP project, which highlights the intersection between pediatric dermatology and mental health, aligned with the goals of the department as well as the institution.

#### Resources

A multitude of resources were necessary to complete the DNP project. First, stakeholder expertise and support were integral to success. Computer software and equipment were also necessary and available, including department iPads. The QI project was not possible without pediatric patients with vitiligo and their families. The CDLQI was available free of charge, so the financial burden of the project was minimal. Time was a valuable resource and was necessary for staff education, stakeholder meetings, and data evaluations.

#### **Data Analysis**

The intervention continued for six months. The DNP student requested data collection through the institution's IS team. Data parameters included the number of pediatric patients with vitiligo who completed the CDLQI, their scores, the number that qualified for a mental health referral, the number of patients with a documented referral, the number of patients with documentation of results in the provider progress note, wait times to first appointment, and if they were able to complete a first visit with a mental health provider from July 1, 2025, to December 31, 2025. Demographic data was not included. Data analysis for QI was shaped around the project goals. Pre- and post-intervention data were evaluated using run charts. For example, in the first goal, the number of new pediatric patients with vitiligo who completed the CLDQI during their clinic visit before the project was compared to the number who completed it post-intervention. Meaningful changes were considered significant (Orginc et al., 2018). The three rules of detection in a run chart include diminished variability noted by too few or too many runs, seven or more consecutive points on the same side of the median, and seven or more consecutive points on the same increasing or decreasing trend (Orginc et al., 2018). A similar process was completed for the number of follow-up pediatric patients with vitiligo who completed the CDLQI during their clinic visit and the number of pediatric patients with vitiligo who were referred to a mental health provider. Data for the length of time from referral to first appointment with a mental health provider was not available for the six months prior to the intervention, so creation of a run chart was not possible. Instead, the DNP student compared the average wait times from before the intervention to the six months post-intervention implementation.

#### Evaluation

#### **Formative Evaluation**

Formative evaluation occurred throughout the project. During monthly department meetings, the DNP student provided updates and led project discussions. These conversations presented opportunities for continuous feedback. Department nursing staff and providers gave insight into feasibility, success stories, clinic workflow, and barriers to implementation. The DNP student directly communicated with project team members throughout the project to address barriers identified by department members, discuss solutions, and facilitate process modifications. For example, the nursing staff acknowledged difficulty in remembering to assign the questionnaire to qualified patients. After discussing options with the nursing clinical lead, department chief, and IS specialist, the team decided to institute a "flag" in patients' charts. The notification would appear for qualified patients within the BPA section of the chart. The BPA is housed under the "rooming" tab, which nurses must utilize during patient triage. When present, items in the BPA are highlighted orange and present at the top of the chart to increase visibility. Once completed, the DNP student relayed the modification to the team and department members, and staff responded with overwhelmingly positive feedback. However, nurses also noted gaps. Not all visit types were initially included in the BPA flag. The IS team was helpful in expanding the queue to new, follow-up, urgent, and telehealth visits, which more accurately captured potential patients.

Formative evaluation also occurred through weekly email updates. The recommendation was suggested by one of the nursing staff in September, who had related a positive experience with a previous report used for a nursing change. Weekly compliance to the CDLQI workflow were communicated through email. Results included the number of patients who qualified for the CDLQI, new versus follow-up visits, how many completed the CDLQI, and how many were referred or given the option of additional interventions based upon results. The communication was positively received by department members. Staff also noted that the regular communication acted as a good reminder to implement and evaluate the CDLQI. The review also provided the DNP student with updated progress on compliance and opportunities to investigate misses in a timely manner.

#### **Summative Evaluation**

During the six months of the project, 74 unique pediatric patients with vitiligo aged 4 to 17 years were seen at the pediatric dermatology clinic. Twenty-nine (39.2%) patients had a new diagnosis, and 45 (60.8%) were follow-up patients. Forty-four patients (59.5%) completed the CDLQI during their visit. Twenty-four patients scored 0-1, showing no effect on quality of life. Sixteen patients scored 2-6, showing a small effect, while three patients scored 7-12 or a moderate effect, and one patient scored between 13-18, representing a large effect. The following categorizes patients within specific age ranges: 22 (29.7%) young school-age children (4-7 years), 36 (48.6%) pre-adolescents (8-12 years), and 16 (21.6%) adolescents (13-17 years). Thirty-three (44.6%) were males, and 41 (55.4%) were female.

The QI project successfully improved patient access to a mental health screening tool, the CDLQI. Prior to July 1, 2025, no mental health screening tool was regularly utilized within the pediatric dermatology clinic for pediatric patients with vitiligo. Once the intervention was initiated, the number of new and follow-up patients who completed the CDLQI during their clinic increased significantly. Thirteen (44.8%) out of 29 pediatric patients with a new vitiligo diagnosis completed the CDLQI. Thirty-one (68.9%) out of 45 follow-up pediatric patients completed the CDLQI in the clinic. Figures 3 and 4 portray the data for new patients. Figure 3 represents the raw numerical data, and Figure 4 represents the percent of new patients seen in the clinic who completed the CDLQI. Figures 5 and 6 portray the data for follow-up patients with Figure 5 depicting the raw numerical data and Figure 6 depicting the percent of follow-up patients exist on

# Figure 3



Number of New Pediatric Patients with Vitiligo who Completed the CDLQI

*Note*. Median = 0

## Figure 4

Percent of New Pediatric Patients with Vitiligo who Completed the CDLQI



*Note*. Median = 0

# Figure 5



Number of Follow-up Pediatric Patients with Vitiligo who Completed the CDLQI

*Note*. Median = 0.5

# Figure 6

Percent of Follow-up Pediatric Patients with Vitiligo who Completed the CDLQI





the median, one cannot determine significance based on shifts or trends. However, the number of runs is less than the required three runs based on the number of data points, which signals a statistically significant change in the data, or practice, due to the intervention (Orginc, et al., 2018). Because each of the data points six months prior to the intervention had a value of zero percent, the first two objectives are no longer applicable. The percent change for new and follow-up patients completing the CDLQI was not calculable. However, the percent of new and follow-up patients who completed the CDLQI in the six months post-intervention represents a valuable change.

Finally, the intervention led to an effect on mental health care. Based on the run chart, the increase in the number of pediatric patients with vitiligo referred to a mental health provider by a pediatric dermatology provider was also statistically significant. In the three years prior to the intervention, only one pediatric patient with vitiligo were referred to a mental health provider through dermatology but never completed a first visit. In the 6 months prior to the intervention, no patients were referred to a mental health provider. Therefore, the third objective cannot be fully addressed because each of data points in the six months prior to intervention had a value of zero, and the practice change could not be calculated. During the six-month intervention, two patients were referred. One of the patients was a follow-up, and the other was a newly diagnosed patient. During October and November, one patient was referred in each month. This change is noted as astronomical data, representing a significant and valuable change in practice (Figure 7).

#### Figure 7



Number of Pediatric Patients with Vitiligo who were Referred to a Mental Health Provider

Both patients scored an eight on the CDLQI, signaling a moderate effect on QoL. Both were offered and accepted referrals. One patient scored a fifteen, or large effect, on QoL. The patient and family were offered a referral to a mental health provider but refused. Prior to the intervention, the average weight time from referral to first visit with a mental health provider was 9.3 months. However, the two patients referred for a mental health visit through the project were directly referred to the clinic's pediatric psychologist. They waited 83 and 42 days for an average resulting in at most less than a 3 month wait time compared to over 9 months prior to the intervention. The average wait time of the two patients was 2.1 months. This change represents a decrease of 77.4%. The objective to decrease the wait time to a mental health provider by 50% was met.

*Note*. Median = 0

Evaluation of feedback from dermatology staff and patients reveals positive perceptions of the change. Despite some technical issues, both groups sighted benefits to the intervention and an impact on patient care. Patients and families welcomed the assessment. However, within the number of those who did not complete the CDLQI, there is no data to show the number of patients or families that refused the evaluation. Exit interviews were completed team members, including the department chief and clinical nurse lead. Final project results were presented at a department meeting. Feedback included the positive impact the project had on patients and a recommendation to continue the intervention. The team has also discussed expanding the practice to additional diagnoses such as hidradenitis suppurativa, psoriasis, and eczema. Increased compliance may improve with the inclusion of additional diagnoses.

#### Strengths

Several strengths bolstered the DNP project. First, the change did not impose financial burdens on patients or the department. The CDLQI was free to use for health purposes, and the hospital did not charge the clinic for additional iPads. The quality of the organization's IS department was another advantage. The IS members were communicative and responsive, allowing for quick adjustments to workflows. Their efforts improved compliance, and the connectivity between the iPad program and the EMR was essential for timely evaluation and response. For example, the flowsheet automatically calculated and delineated patient risk levels based upon answers to the CDLQI, which allowed providers to take appropriate action steps when indicated. Additionally, the CDLQI promoted a patient-focused intervention. The evaluation of personal experiences diminished provider evaluation error, and patients could refuse the CDLQI if desired. Finally, departmental staff members' support and dedication were pivotal to the project and provided a foundation for success. Staff of all levels were open to the

change, shared constructive feedback, engaged in the intervention, supported each other, and were flexible when adjustments were made. As discussed previously, the DNP student sent out weekly progress updates, which originated from one of the nursing staff and was positively received by all.

The CDLQI is a sustainable intervention. The tool is free and inflicts no cost on the department or patients. It is also a short survey that can be completed by patients quickly, which limits disruptions. It has been fully integrated into the EMR and the pediatric dermatology clinic's workflow, solidifying its use for pediatric patients with vitiligo. Parameters for inclusion have been established and modified to fit the needs of the assessment tool, as well. For example, an IS specialist developed a new flowsheet and documentation for the tool, which is easily accessible with the EMR. The CDLQI is readily available for future patients. Adjustments made during the implementation phase, such as adding visual cues to the nursing staff while rooming patients, also improved sustainability.

The referral pathway to a mental health provider is also sustainable. The current process links patients to a pediatric psychologist who is linked to the pediatric dermatology department. This position was developed prior to the DNP project and does not add an additional cost to the department. The referral pathway circumvents a general behavioral health referral within the hospital system, which has a wait time of several months. Therefore, shorter wait times linked to the pediatric psychologist improves access to care for patients in need. However, a loss of the position or an increase in workload may increase barriers and alter sustainability.

The results show that while most children do not experience a significant impact on QoL due to their vitiligo, it affects some patients' QoL. Four patients showed a moderate to large effect on their quality of life during the intervention that would have previously been missed.

Two of the patients pursued a referral to a mental health provider and were successfully connected to the pediatric psychologist. Their wait time was much shorter compared to patients given a generic mental health referral. The CDLQI represents a patient-centered tool that can be easily integrated into routine pediatric dermatology care, identify at-risk patients, and lead to a positive impact on patient outcomes.

#### **Barriers and Limitations**

Various barriers and limitations were encountered while implementing the CDLQI into the pediatric dermatology clinic. The start of the QI project was delayed due to IRB inquiries but was ultimately determined not to be research and given approval to continue. CDLQI access was another barrier because the project utilized iPads. Limited devices were initially available in the clinic. When new iPads were acquired, they needed additional configuring to allow the EMR coding to work properly. Until that point, nursing staff had to complete the assessment verbally and enter answers into the chart. Also, the CDLQI was only offered in English through the EMR. However, the tool has been developed and validated in other languages. Therefore, interpreters were utilized when needed, which could have represented a barrier to completion or misinterpretation. One way to combat this barrier in the future is to have the assessment available in other languages on paper copies. Staff would need to enter results based on their responses. Parental influence may have also altered results, especially when parents were needed to help complete the questionnaire in younger patients. Older patients, including adolescents, may have been affected by parental bias while answering questions.

Implementation of the CDLQI into the regular clinic workflow was an additional obstacle. Adjustment to a new process was difficult for departmental staff. Department members, including nurses and providers, frequently forgot to assign the tool to patients or evaluate the

results within the clinic appointment. Vitiligo patient visits were scattered intermittently throughout busy clinic schedules, which likely contributed to the phenomenon. The pattern was more prominent during the first half of the project. Changes to the EMR improved compliance. BPA flags during the rooming process acted as an effective reminder to staff, and once initiated, the nurses more often connected with providers regarding CDLQI results. Adjustments were needed to ensure all patients were captured by the inclusion criteria in the EMR. The IS team quickly broadened the flag to triggers for any patient with "vitiligo" listed in the problem list, previous diagnosis, or referral diagnosis. Appointment types were also expanded to include telehealth, urgent, new, and follow-up visits. Patients with a new vitiligo diagnosis also had a lower completion rate. Forgetfulness during busy, fast-paced clinics was a likely barrier. For new patients, the BPA indicator did not trigger until after a visit diagnosis of "vitiligo" was entered into the patient chart. At times, diagnosis entry occurred after the patient left the clinic or was dependent on a rotating resident without knowledge of the workflow. As a result, nursing staff may have missed the BPA if they did not re-enter the patient's chart. Finally, providers had to remember to select the dropdown in the EMR note to pull the results from the flowsheet into the patient chart. Consequently, some patients were missed during the early stages of the project.

Objective assessment was another limitation. The zero percent data points of the first two objectives six months prior to intervention inhibited evaluation of a practice change. Objectives addressing the percent of total new and follow-up patients who completed the CDLQI during clinic visits would have been a more appropriate evaluation of the current data. The data points for the number of patients referred to a mental health provider was also zero for six months prior to the intervention. Because mental health referrals were dependent on patient CDLQI results, they were influenced by patient responses rather than the practice change. The use of the CDLQI

increased the likelihood of identifying at-risk patients. The objective was not well fitted to the project.

#### **Ethical Issues**

Minimal ethical issues arose during the intervention. Patients were offered the CDLQI and could refuse if desired, representing patient autonomy and respect. Completion of the CDLQI represented consent. Their choice did not alter the course of care or management. All patients who met the criteria were offered the assessment and appropriate interventions as indicated regardless of background, representing the principle of justice. However, the CDLQI in the project was only offered in English. Interpreters were utilized when needed, representing a potential barrier to completion. The intervention posed minimal risk and was implemented to benefit the patient by identifying those with mental health burdens secondary to their vitiligo.

#### **System and Practice Impact**

#### **Implications for Practice**

This DNP project highlights the importance of holistically evaluating pediatric dermatology patients, which includes mental health. Because skin conditions, including vitiligo, can be difficult to hide, they can impact patient psychosocial interactions and QoL (Moss et al., 2022; Onen et al., 2019; Uzuc et al., 2021). Integrating a low-burden QoL or other mental health assessment into regular practice can help identify patients with mental health comorbidities (Chen & Schmidt, 2021; Zambare et al., 2021). Dermatology providers can then connect at-risk patients with a mental health provider, improving care beyond skin management.

The CDLQI is one assessment tool. The members of the pediatric dermatology department must continue considering additional tools, especially as new ones are developed and validated, that match with patient and department needs. However, the intervention showed that

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an assessment tool could be successfully implemented into a regular clinic workflow without significant disruption, identify at-risk patients, and improve access to mental health care. An opportunity exists to expand the intervention to other dermatologic conditions, such as alopecia areata, acne, psoriasis, and atopic dermatitis.

#### **Recommendation for Nursing Practice**

As mental health concerns continue to rise, implementing practices that identify at-risk patients are important (Sorter et al., 2023). By doing so, providers can better address holistic patient needs. The DNP QI project acknowledges mental factors within the pediatric dermatology field, especially for those with visible conditions, such as vitiligo. The QI project successfully identified four patients with impacts on their QoL, resulting in two referrals to a mental health provider and representing a significant impact in care. APRNs working with pediatric patients with vitiligo should be cognizant of the effect of vitiligo on QoL. Interventions aimed at identifying at-risk patients can be easily added to established clinic workflows, especially when using EMRs. Many assessments, such as the CDLQI, are short and can be completed and scored quickly. Stratifications of scores help to guide additional interventions, including referrals to mental health providers. Utilizing an assessment tool directed at pediatrics and skin disease is important. These tools focus on children whose QoL and mental health may be affected by their dermatologic disease rather than other factors. Collaborations with mental health providers, especially those with experience in pediatric patients affected by clinical disease, is also important. APRNs should develop these connections to improve patient care.

#### **Recommendations for the Future**

Although utilization of mental health and QoL tools have been established, the literature lacks evidence comparing their usefulness within a clinical setting. Limited options exist to

target pediatric patients with dermatologic conditions. Therefore, continued development of dermatology-focused pediatric mental health and QoL measurements would be beneficial to the field. Future studies should also focus on comparing tools to guide recommendations on how to best choose and utilize them for patient care.

Studies within the clinical setting are also recommended. Evidence evaluating the effect of vitiligo on pediatric mental health and QoL is important, especially in the wake of current conflicting evidence. Data on patterns or characteristics that increase risk for psychiatric burdens will be helpful to direct resources and interventions. Additional studies and recommendations on how to effectively implement psychiatric tools within a pediatric dermatology visit can promote change and may encourage providers to implement these tools within their practice.

#### **Dissemination Plan**

Dissemination of knowledge is an important aspect of nursing practice and the DNP project (AACN, 2021). It is also incorporated in the fourth domain of the AACN's nursing essentials, "Scholarship for Nursing Discipline." For this project, the DNP student will develop a final presentation to the department, showcasing the project's progress and results. The goal of dissemination to department members is to share the usefulness and impact of mental health tools, specifically the CDLQI, within the clinic. By doing so, stakeholders can make an informed decision to halt, adjust, or continue the intervention. Stakeholders may also consider expanding use to other pediatric dermatologic conditions.

In addition, the DNP student is preparing a manuscript to be submitted to a scholarly journal for publication. Through publication, the project will highlight the benefits and feasibility of implementing mental health tools into pediatric dermatology clinics. The project shows that such an intervention can provide a substantial impact without a large disruption to clinic workflows. The target journal for publication is *Pediatric Dermatology*. This peer-reviewed, well-respected journal is the Society of Pediatric Dermatology's publication and includes the intended audience, pediatric dermatology providers. The *Journal of the Dermatology Nurse's Association* captures dermatology-focused nurse practitioners and would be a qualified, provisional journal for the publication.

#### Conclusion

Thorough, thoughtful, and specific quality improvement in healthcare can make a profound impact in patient outcomes. The DNP QI project focused on improving access to mental health care for pediatric patients with vitiligo is one example. By integrating a screening tool, the CDLQI, into regular practice within the pediatric dermatology clinic, children with vitiligo were effectively evaluated for QoL burdens. Pender's Health Promotions Model and the Six Sigma QI framework guided the change, and a multidisciplinary team of experts implemented the vision, problem-solving, and advocacy. Through this process, pediatric patients with vitiligo experienced improvement in holistic care that addressed their physical and mental health needs. Continued evaluation of mental health and QoL assessment tools are needed for pediatric patients with dermatologic conditions, including vitiligo.

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# Appendix A

# Children's Dermatology Life Quality Index

CHILDREN'S DERMATOLOGY LIFE QUALITY INDEX					
Hospita Name:	pital No se: Diagnosis:		CDLQI		
Age. Address	: ress: Date:		SCORE.		
The aim of this questionnaire is to measure how much your skin problem has affected you OVER THE LAST WEEK. Please tick 🗸 one box for each question.					
1.	Over the last week, how itchy, "so	ratchy",	Very much		
	sore or painful has your skin been	?	Quite a lot		
			Only a little		
			Not at all		
2.	Over the last week, how embarras	ssed	Very much		
	or self conscious, upset or sad hav	ve you	Quite a lot		
	been because of your skin?		Only a little		
			Not at all		
3.	Over the last week, how much has	Very much			
	skin affected your friendships?	-	Quite a lot		
			Only a little		
			Not at all		
4	Over the last week, how much have	e vou changed	Very much		
	or worn different or special clothe	es/shoes	Quite a lot		
	because of your skin?		Only a little		
			Not at all		
5.	<ol> <li>Over the last week, how much has your</li> </ol>		Very much		
	skin trouble affected going out, pla	aying,	Quite a lot		
	or doing hobbies?		Only a little		
			Not at all		
б.	Over the last week, how much have you		Very much		
	avoided swimming or other sports because		Quite a lot		
	of your skin trouble?		Only a little		
			Not at all		
7.	Last week	If school time: Over the	Prevented school		
	was it	last week, how much did	Very much		
	school time?	your skin problem affect your	Quite a lot		
	OB	school work?	Only a little	-	
	UK		NOT at all		
	was it	If holiday time: How much	Very much		
	holiday time?	over the last week, has your	Quite a lot		
		skin problem interfered with	Only a little		
		your enjoyment of the <b>holiday</b> ?	Not at all		
8. Over the last week, how much troubl		ble	Very much		
	have you had because of your skin	with	Quite a lot		
	other people calling you names, to	easing,	Only a little		
	bullying, asking questions or avo	iding you?	Not at all		
9.	Over the last week, how much has	your sleep	Very much		
	been affected by your skin problem	1?	Quite a lot	-	
			Unity a little		
			INOT AT ALL		
10.	Over the last week, how much of a		Very much		
	problem has the treatment for you	r	Quite a lot		
	skin been?		Only a little		
Plance	Please check that you have answered EVERY question Thank you				
r news check man you have answered EVENT question. I hank you.					

(Lewis-Jones & Finlay, 2004)

# Appendix **B**

# Dermatology Clinic Workflow with Integration of CDLQI



#### Appendix C

#### Nationwide Children's Hospital IRB Determination



700 Children's Drive | Columbus, Ohio 43205

#### NOT HUMAN RESEARCH DETERMINATION

July 8, 2024

Brittany Kozy Division of Dermatology

Dear Brittany Kozy: On 7/8/2024, the IRB reviewed the following submission:

Type of Review: Initial Study		
Title:	e: Evaluating Quality of Life Burdens in Pediatric	
	Patients with Vitiligo and Improving Access to Mental	
	Health Care	
Investigator:	Brittany Kozy	
IRB ID:	STUDY00004292	
IND, IDE, or HDE:	None	
Risk Level:	N/A	
Documents Reviewed:	Documents Reviewed: • CDLQI-English (3).docx, Category: Other;	
	<ul> <li>Data Collection QoL Vitiligo.xlsx, Category: Other;</li> </ul>	
	<ul> <li>Patient MRN Coded QoL Vitiligo.xlsx, Category:</li> </ul>	
	Other;	
	<ul> <li>Quality of Life in Pediatric Patients with</li> </ul>	
	Vitiligo_Short 1.0_6.22.24.docx, Category: IRB	
	Protocol;	

The IRB determined that the proposed activity is not research involving human subjects as defined by DHHS and FDA regulations.

IRB review and approval by this organization is not required. This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are made and there are questions about whether these activities are research involving human in which the organization is engaged, please submit a new request to the IRB for a determination.

Sincerely,

Kaen White



Page 1 of 2



Karen A. White, Ph.D., Chair Institutional Review Board

cc: Brittany Kozy

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#### **Appendix D**

#### Kent State University IRB Determination

7/11/24, 2:10 PM

Mall - Kozy, Brittany - Outlook

**EXT: IRB Determination Form** 

Research Compliance <noreply@qemailserver.com> Tue 7/9/2024 8:55 PM To:Kozy, Brittany <bkozy@kent.edu>

Your project till: R\_1burOc5Qy6s5rwd

Based on your responses to the online IRB review determination module, your activity is not human subjects research as defined by DHHS, so 45 CFR 46 does not apply and you do not need to take further IRB action.

Please be aware that you are responsible for ensuring your research is conducted ethically (i.e. in accord with the Belmont Report). Other federal, state, KSU policies and local laws and/or regulations may apply that are not under the oversight of the IRB; please consult with your academic department to learn more.

If you make changes to the project that may affect this determination, you must notify the IRB prior to implementing the change(s).

This email includes a unique identifying number. Please keep this email in your research files. We will only be able to access your file (should it be necessary) using this identifying number.

If you feel this determination is not correct or if you have any questions contact us at researchcompliance@kent.edu.

Once again, thank you for completing this form.

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