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Screening for Resilience in Pediatric Primary Care

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Author Note

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Abstract

Introduction: Adversity in childhood increases risk for physical and mental health problems. Children who undergo adverse events can still flourish, due to the concept of resilience. Literature shows that resilience influences health more than adversity, and screening for resilience may improve practice.

Method: A valid screening tool for resilience, The CD-RISC, was given to children twelve and above during their well visit during February 2021 at a clinic in Oceanside, CA. Scores were categorized into four quartiles. Children responding in the lowest two quartiles received provider follow up.

Results: 97 surveys were scored: 39 scoring in the lowest quartile, 19 in the second lowest, and 39 in the top two quartiles. Only 11 out of the 39 children in the lowest quartile were previously identified at their well visit as having any mental health concerns.

Discussion: Screening for resilience provides an opportunity for providers to identify children who would benefit from interventions aimed to foster resilience.

Resilient Children: Screening for Resilience in a Primary Care Setting

Background

Due to the groundbreaking data from the ACE Kaiser Study published in 1998, the potentially devastating effects of adversity and toxic stress in childhood are well known to pediatric providers (Felitti et al., 1998). Depression, suicide, and risk-taking behaviors as well as incarceration rates and chronic diseases are all associated with adverse events in childhood (Center for Disease Control, n.d.). But not all children who undergo adversity have poor outcomes. In fact, some children still flourish despite their circumstances, and understanding why may be key to improving primary prevention of mental health disorders and chronic disease in pediatric primary care.

Resilience, or the ability to recover and prosper after stressful experiences, has been studied by a wide range of disciplines and is complex and multi-faceted (Martinez & Opalinski, 2019). Resilience is developed by the interactions between extrinsic and intrinsic protective factors, and evidence demonstrates that when children have a higher number of protective factors, they are able to continue to thrive even in the face of adversity (Harvard University Center on the Developing Child, 2021). This idea that resilience is made up of various constructs including psychosocial attributes, social and familial relationships, and community infrastructure indicates that some, if not all, aspects of resilience can be nurtured (Martinez & Opalinski, 2019). Secure connections, supporting self-acceptance, and building skills on reaction to stress and adversity have been identified as approaches that may be able to be used to foster resilience and strengthen the ability of children to thrive despite adverse situations (Martinez & Opalinski, 2019).

The Harvard Center on the Developing Child and the National Scientific Council on the Developing Child have established the idea of "tipping the scale" towards positive outcomes (Harvard Center on the Developing Child, 2020). Much like a seesaw, if one side is heavier than the other, the more difficult it is to tip the scale. In other words, if children are provided with positive relationships, community support systems, and resources to promote their strengths, it may be more difficult to "tip the scale" towards negative outcomes (Harvard Center on the Developing Child, 2020). Resilience is complex because there are most likely biological components that influence a child's sensitivity to environmental influences, however the availability of at least one supportive relationship, the presence of spiritual or cultural support, and the ability of a child to identify the positive that can come from stress, have all been identified through research as attributes that can negate some of the harmful effects of toxic stress (National Scientific Counsel on the Developing Child, 2015; Pandya, 2019). Though providers assess psychosocial needs of a child as a part of a typical well child exam, it is not currently standard of practice to screen specifically for resilience or existing protective factors. Evidence supports that approaching care by identifying and promoting strengths versus only identifying risks may be beneficial in improving primary preventative care in children (Lavoie et al., 2016).

Evidence Based Practice Model

The Johns Hopkins Nursing Evidence Based Practice Model (JHNEBM) was utilized for this project. The JHNEBP Model is composed of three parts: inquiry, practice, and learning, and these components are interrelated to ultimately achieve practice improvements and best practices (Dang & Dearholt, 2017). The open, nonlinear nature of this model was particularly beneficial during the duration of this project, as the timeframe of the implementation was altered due to

the COVID 19 pandemic. Part of the process of development of a practice question using the JHNEBP Model involves recruiting an interprofessional team prior to developing the EBP question (Dang & Dearholt, 2017). The writers collaborated with the Director of Behavioral and Mental Health Services at the selected clinical site, and after an initial review of the literature on resilience posed the question of whether a valid and reliable screening tool for resilience exists for use in pediatrics. An appropriate tool was selected and the EBP question was refined multiple times as new literature was obtained, new stakeholders were identified, and needs of the practice changed during the global pandemic.

The JHNEBP model provides a guide for evidence appraisal and promotes the use of high level and high-quality evidence for the development of the project, but also allows for non-research factors such as legislative or institutional influence. This was useful in the implementation of this project as institutions such as the Harvard Center on the Developing Child have created platforms dedicated to adverse childhood events and resilience and can serve as a source of information to explain resilience to families and children.

Literature Review

Using the CINAHL and PsychInfo databases online, an initial literature review was conducted using the key words resilience, resiliency or resilient, and child or children, and outcomes. Parameters were added to include only peer reviewed articles, English language, and involving children 18 and under. After reviewing titles for relevancy and conducting follow up literature reviews throughout the duration of the project, 37 articles were selected from CINAHL and 33 from PsychInfo. 26 papers were selected based on abstract review to analyze for quality and level of evidence using the John Hopkins Nursing Evidence-Based Practice Model research appraisal tool. Through the review of these papers, references were scanned for any additional

literature. 11 total articles were selected based on their quality and ability to address at least one of the following questions: Does higher resilience improve mental or physical health outcomes, can resilience be fostered and improved over time, and does a valid and reliable screening tool for resilience exist?

The 11 papers consisted of five level I and six level III studies. Multiple studies addressed one particular population with risk factors, such as mental health or physical illnesses. One meta-analysis addressed resilience in its relation to physical health and included RCTs in the analysis addressing a variety of pediatric populations. There were 14 studies included in this analysis, with 12,772 participants in total (Lavoie et al., 2016). Some of the studies included addressed the impact of vulnerability factors, or stressors, on physical health. Stressors that were noted included low socio-economic status, stressful life events, maltreatment, and stressful family dynamics. Other studies included addressed the effects of protective factors on physical health, including mental toughness, determination to persevere, attitude towards adversity, and supportive family relationships (Lavoie et al., 2016). Comparison of the effects of protective factors and vulnerability factors on pediatric physical health outcomes demonstrated that while vulnerability factors do impact health outcomes of a child, protective factors have a stronger influence (Lavoie et al., 2016).

A second meta-analysis included in this review examined the effects of interventions, specifically school-based interventions, that target resilience (Dray et al., 2017). A total of 49 studies contributed to the meta-analysis, 28 of which targeted internal resilience protective factors and 29 trials targeted both internal and external resilience protective factors. Many trials included curriculum based upon cognitive behavioral therapy, as well as additional components such as mindfulness and life skills (Dray et al., 2017). The meta-analysis indicated significant

improvement of anxiety symptoms and psychological distress in young children in particular and demonstrated significant improvement specifically in the domain of internalizing problems in adolescents (Dray et al., 2017).

The three randomized control trials included in this review continue to support the idea that resilience can be promoted and improve outcomes in children and adolescents through use of focused interventions. Children with chronic illnesses are a particularly high risk group for psychological distress and decreased quality of life (Rosenberg et al., 2018). An intervention called the Promoting Resilience in Stress Management (PRISM) intervention is a skills-based intervention with cognitive behavioral therapy components, goal setting, and targeted stress management. Using multiple measures including the Connor-Davidson Resilience Scale Score, the Pediatric Quality of Life module, the Kessler-6 psychological distress scale, and the Hospital Anxiety and Depression, researchers determined the efficacy of PRISM with 36 adolescents and young adults with chronic illness randomized to the intervention group, and 38 in the control group receiving usual care (Rosenberg et al., 2018). PRISM consisted of four individual sessions, and screening tools were administered at baseline and six months after intervention. The intervention group demonstrated significantly higher resilience scores as well as cancer-specific quality of life post intervention (Rosenberg et al., 2018). A similar intervention was used in an RCT assessing the impact of resilience-based intervention on emotional intelligence in adolescents (Adibsereshki et al., 2019). An intervention that included lessons on cognitive and behavioral skills, outcomes of negative thinking, and interpersonal skills was developed and studied in adolescents with hearing loss. 125 adolescents were randomly selected from a pool of 264 potential participants and were randomly assigned to the experimental group or the control group. The Connor-Davidson Resilience Scale and the Schutte Emotional Intelligence Scale

were the measures utilized pre and post intervention, with no significant differences between groups before intervention (Adibsereshki et al., 2019). The intervention was highly effective demonstrating an increase of resilience scores by 20 points and significant increase in emotional intelligence scores.

As suggested by the Harvard Center on the Developing Child, spirituality and other important community resources are known to be beneficial for children and developing their resiliency. An RCT using a spiritual education program for caregivers and their child with diagnosis of acute anxiety was completed in 2019 across 15 different cities and 180 schools (Pandya, 2019). The intervention was based on certain concepts of major religions but focused mainly on promoting innate strengths of the child, developing meaningful relationships between parent and child, promoting authoritative parenting, and empowering children to engage in mindfulness and recognize their existing strengths (Pandya, 2019). Significant improvement in resiliency scores of the child were demonstrated in the intervention groups.

Support for the Level I evidence included four level III systematic reviews, and two level III nonexperimental studies. Children in the foster system are another vulnerable population, in particular children living in residential care, with higher risks of educational difficulties, levels of incarceration and homelessness, and chances of developing a psychiatric disorder as opposed to the general population (Lou et al., 2018). A systematic review of literature on resilience in its relation to outcomes of children in residential care identified that when there were opportunities given to these children to promote resilience, including the availability of a caring adult or presence of a mentor, more positive outcomes were achieved (Lou et al., 2018). Children with ADHD are also known to experience a higher rate of problems as compared to the general population including academic failure, conduct problems and health problems (Dvorsky &

Langberg, 2016). In reviewing the literature existing on the relationship between ADHD and resiliency, factors such as positive social and family systems, positive parenting, and social acceptance all demonstrated desirable effects on the outcomes in children with ADHD (Dvorsky & Langberg, 2016). Similarly, children with intellectual disabilities are at risk of higher rates of unemployment, dropping out of school, and mental health problems (Raghava & Griffin, 2017). A review of ways in which resilience support can reduce negative social and economic outcomes in children with intellectual disabilities found that positive peer relationships were of utmost importance in this population, as this likely serves to negate the effects of discrimination and stigma faced by these children (Raghava & Griffin, 2017). The effects of peer relationships as well as parenting styles and family level factors are consistent throughout the literature. A review on the connection of external resilience factors in African American children to behavioral outcomes demonstrated associations between positive parenting and warmth and acceptance on lower amounts of behavioral problems (Washington et al., 2015).

Children who have acquired traumatic injuries also demonstrate a need for resilience to heal on a physical and psychological level. Head injuries can lead to Post Concussion Symptoms, including anxiety and depression. Researchers used the Connor Davidson Resilience Scale (CD-RISC) and the Behavior Assessment System for Children in comparison to the Post Concussion Symptom Inventory in adolescents following a concussion. The outcomes demonstrated significant correlation between higher resilience and lower Post Concussion Symptoms (Durish et al., 2019). These same researchers had previously assessed the validity of the CD-RISC in looking at children with history of concussions and orthopedic injuries, demonstrating that children with higher resilience generally displayed less behavioral problems as well as lower depression across both groups. (Durish et al., 2018).

Literature consistently shows that resilience is not only a clear buffer between negative events or situations and negative health outcomes, but it can also be measured and promoted. The literature also supports that identifying strengths and protective factors, which are components of resilience, can support clinicians in improving preventative care for children.

Evidence Based Intervention

Selected Screening Tool

The Connor Davidson Resilience Scale was selected for use in this project as it was the scale utilized in four of the articles in the literature review, including two of the RCTs. The Connor Davidson Resilience Scale, or CD-RISC, was initially developed in 2003 as a 25-question survey (Connor & Davidson, 2003). The researchers developed the scale based on extensive review of resilience theories and determined domains of resilience, as well as characteristics of resilient people in history. Some of these characteristics include self-efficacy, sense of humor, patience, and viewing stress as an opportunity (Connor & Davidson, 2003). The literature review supports that positive personal protective factors such as self-efficacy and mental toughness are related to high resiliency, as well the ability to learn from stressful situations, persevere and thrive in difficult situations. Thus, the questions included on the CD-RISC were in line with the evidence and served as an appropriate tool to implement in a pediatric setting.

The CD-RISC has two adaptations from the 25-question scale: one as a 2 question scale and the other as a 10 question scale (Davidson, 2020). The CD-RISC has been validated for children 10 and above, but due to the statement that the Flesch Reading Score indicated that children twelve and older should be able to understand and complete the tool with ease, the scale was implemented to children twelve and above (Davidson, 2020).

Permission was received from Dr. Johnathan Davidson in June of 2020 for use of the CD-RISC 10 for purposes of this project. The questions on the scale may not be published in this paper due to copyright limitations. The updated manual for use was provided after permission was obtained, including instructions for scoring the tool. The CD-RISC 10 score can range from 0-40, and the scores have been divided into median and quartile scores based on the national average scores in the general population (Davidson, 2020). The lowest quartile, or Q1, includes scores from 0-29 and represents scores that compare to the lowest 25% of the population. Q2, the second lowest 25% includes scores from 30-32. Q3 is the second highest quartile with scores from 33-36, and Q4 includes scores from 37-40 and represents scores that compare to the highest 25% of the population.

Project Development

After review of the literature and identification of an appropriate screening tool for resilience, the DNP student collaborated with the Director of Behavioral and Mental Health Services at the selected pediatric medical group in San Diego County to finalize the project question and plan for implementation. Initial IRB approval from the University of San Diego (USD) was received on July 27, 2020. Due to the COVID-19 pandemic, multiple barriers to project implementation occurred, and changes to the location of the clinic as well as plan for implementation were required. The project question and purpose was finalized: Can screening for resilience serve as a beneficial and feasible method of primary prevention of negative outcomes from adverse and stressful events in a primary care pediatric clinic?

Project Plan and Implementation Process

As per the John Hopkins Evidence Based Nursing Model, collaboration with key stakeholders (a pediatric nurse practitioner, clinic manager, and lead physician) was done

continuously to identify new barriers or needs throughout the duration of the project (Dang & Dearholt, 2017). All adolescents ages 12 and above presenting to the clinic for their well-child visit during the dates of February 1, 2021 and March 3, 2021 were administered the CD-RISC 10 in a paper form. The completed forms were placed in a folder for weekly review and scoring. After which clinic providers were given the results and recommendations for follow-up. Demographic data including age, gender, and race of respondents was collected along with their total CD-RISC 10 score. The summary of the well-child visit was also reviewed to determine if a mental health diagnosis was present on the existing problem list, or if a referral had been placed to any mental health services. No questionnaires were removed from the clinic, and all patient identifiers were removed during data collection and interpretation.

During the implementation process, it is an important aspect of the JHNEP model to continue questioning and revisiting barriers and evidence during the duration of the project to improve outcomes (Dang & Dearholt, 2017). After the CD-RISC was scored, a barrier was identified in communication of the result to providers. Initially, they were to receive a message in the electronic record with the score interpretation and recommendations scanned into the chart, but this was found to increase provider workload and could lead to missed results. In collaboration with stakeholders, dot phrases, or preestablished templates implemented into the health record and patient portal, were created for notification of results and identification of those needing provider follow-up.

Adolescents who scored in Q3 or Q4, scored above the national average, and required only routine standard of care. Those scoring in Q2 and Q1 were assessed: if they were already connected with a mental health provider, no action was required. The patient portal was used to communicate with the child and family. Separate dot phrases were created for portal

communication with the child and family for the two groups, both defined the concept of resilience and how it might affect the child's health and included family friendly web resources from the Harvard Center on the Developing Child and the American Psychological Association on resiliency.

Those scoring in Q2 or Q1 who were not receiving mental health services received additional information. For those in Q2, families were encouraged to contact their provider if they felt that they were easily discouraged, had a difficult time adapting to change, or struggled to cope with stressful situations. For those in Q1, the adolescent and family were provided with the same education and were referred to the integrated mental health therapist practicing within the clinic.

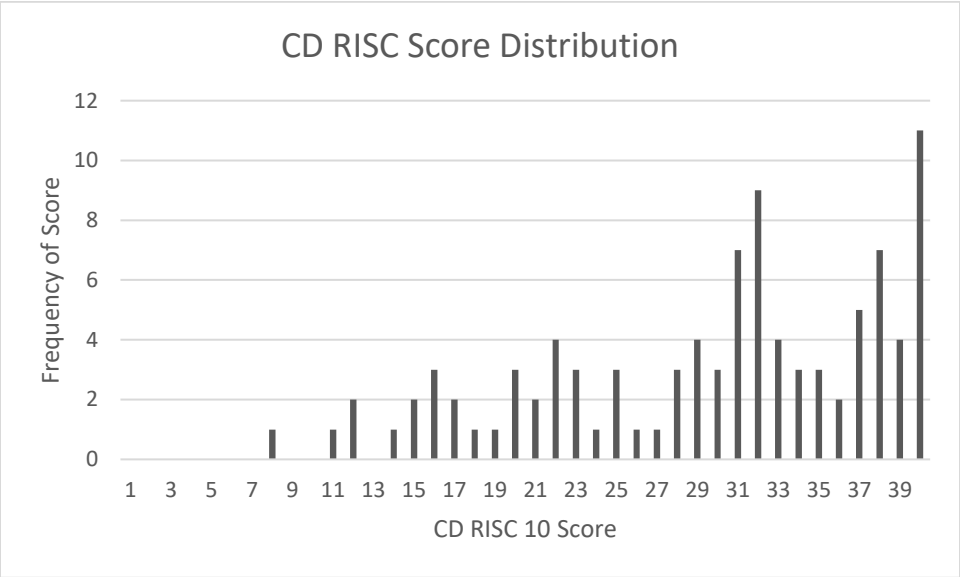
Results

Between the dates of February 1, 2021 and March 3, 2021, 104 questionnaires (n=104) were distributed to adolescents age twelve and above at their well-child visits. Four questionnaires were returned incomplete, two were not properly labeled, and one was filled out incorrectly. 97 questionnaires (n=97) were included in data analysis. 52 respondents were female (n=52) and 42 were male (n=45). Ages of respondents ranged from 12 to 18 with the average age being 14.69.

Scores ranged from 8 to 40, with 39 scoring in the quartile one (Q1), 19 in quartile two (Q2), 12 in quartile three (Q3), and 27 in quartile four (Q4). Score distribution is shown in Figure 1.

Figure 1

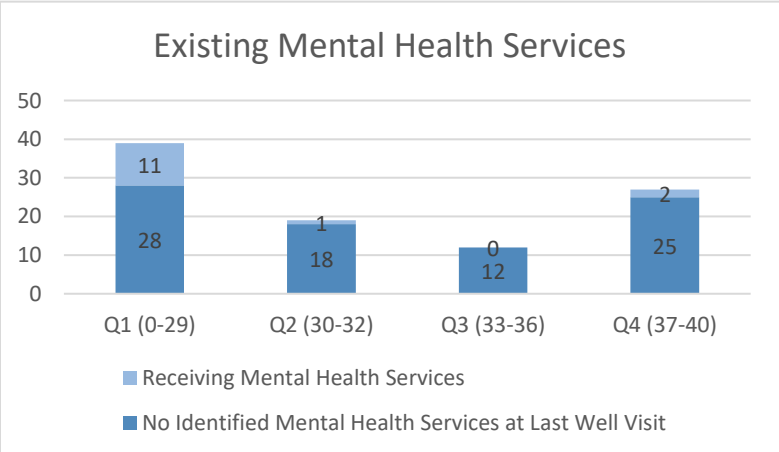
CD RISC Score Distribution



Based on the visit summary found on the EPIC electronic chart, 14 of the respondents had either been referred to a mental health service or had a mental health diagnosis written on their problem list. As shown in Figure 2, 11 of these respondents were those that scored in Q1 on the CD-RISC, one was in in Q2, and two were in Q4.

Figure 2

Existing Mental Health Services by CD-RISC Score Quartile



The overall average score of all respondents was 29.6, as compared to the national average score of 32 (Davidson, 2020). Minimal differences were seen in the average scores between gender (29.73 for females and 29.42 in males). However, when scores were broken down by race of the respondents, a notable difference in average score of Hispanic children versus white children was identified, as seen in Table 1.

Table 1

Results by Race and Average Score

Race	Average Score	# of Patients
Asian	31.09	11
Black	33	4
Hispanic	26.42	31
Other	26.25	4
Samoan	14	1
White	31.69	46

Clinical Implications

Strengths and Limitations

The literature strongly supports the use of a strengths-based approach to care of adolescents to improve primary prevention for both physical and mental illnesses, thus one of the major strengths of this project was the high level of evidence in support of assessment of protective factors or resilience. The JHNEBP Model was also a strength of this project as barriers were identified throughout the implementation process and solutions were identified prior to the completion of the project. As only one child did not complete the CD-RISC 10 correctly, the selected tool for this project demonstrated ease of use and was simple to score and interpret.

Limitations of this project include a small sample size and timeframe, and lack of follow up from the point of notification of scores. Due to COVID-19, the principle investigator was unable to spend time in the clinic prior to implementation of the project, thus barriers could have been identified more quickly with improved understanding of clinic workflow. At the project end, the clinic pediatric nurse practitioner was in the process of notifying children and family of the scores. Although assessment of follow up effectiveness was not one of the measures identified in this project, a future project may be beneficial to assess the feasibility and response to the follow up through the portal notification. Although the majority of screening tools appeared to be completed without difficulty, only an English version of the CD-RISC 10 was distributed throughout this project. The percentage of non-English speakers at the clinic is unknown, but due to the high number of Hispanic respondents, providing access to the Spanish version of the CD-RISC 10 when needed would have been beneficial to the results of this project.

Cost Benefit Analysis

The cost of the actual project will differ slightly from the projected cost of real time implementation of the intervention, due to variables including cost of DNP student time and CD-RISC fee for student use. The CD-RISC cost for project use was a one-time fee of $30. It was estimated that the clinic manager spent approximately 1.5 hours on administrative tasks required of the project including printing, labeling, and scanning forms. It was estimated that the PNP spent approximately 12 hours completing follow up for all 97 forms. DNP student spent approximately 6 hours scoring the forms over the month of implementation. Other costs included paper and staples as the tool was not implemented into the electronic record. Based on the

estimated wages of the PNP and Clinic Manager as obtained from Glassdoor.com, as well as local costs of office supplies, the total project cost was calculated to be $718.30.

Since the project was implemented over one month, and forms were given to all well child visits twelve and above, this number provides a good estimate of the number of forms that would be given per month in real time application, thus the calculations for time spent on required project tasks remains unchanged. However, the CD-RISC would cost $0.50 per use when not being used for research or evidence-based practice purposes. Instead of the DNP student scoring the forms, an employee would have to complete this task. The scoring process could be completed by a Medical Assistant (MA), who could also take over the administrative tasks completed by the clinic manager. Based on Glassdoor estimate of a MA salary at this clinic, the cost of an estimated 100 CD-RISC forms administered, the monthly cost of the real time implementation of this project is projected at $789.30.

Short term fiscal benefits would be achieved through billing and reimbursement. As this is a brief emotional and behavioral assessment, the CPT Billing code of 96127 is used and can be reimbursed by MediCal at $4.81(California Department of Healthcare Services, 2020). For the children that require follow up visits or interventions, reimbursement would be based on complexity of visit and time. Reimbursement for follow up visits can range from approximately $50-90 (Center for Medicare and Medicaid Services, 2019). If approximately 44 out of 100 children were estimated to require follow up based on results of the project and visits were reimbursed at a rate of $50, and 100 CD-RISC 10 forms were billed using the CPT code 96127, the total monthly reimbursement would equate to $2681.

Identifying resiliency needs in adolescents in order to foster protective factors has the potential to offset some of the negative outcomes of adverse childhood events. In doing so, there

is a potential for extraordinary financial and social benefits. The lifetime costs of adverse childhood events results is estimated at $3.5 billion in productivity loss and $25 billion in healthcare costs (Center for Disease Control, n.d.). Utilizing resilience screening and promotion as a tool for primary prevention has the potential to reduce these numbers significantly, though more research must be done on the long term benefits of resilience promotion (Dray et al., 2017).

Conclusion and Clinical Implementations

The results of the CD-RISC 10 scores ranged from 8-40, with the highest number of children scoring in Q1, and second highest number scoring Q4. Though the highest number of scores fell into the Q1 category, the most frequent score was 40 – the highest possible score - followed by 32, which is the national average. This indicates that resilience can range significantly among children, and though many children do demonstrate above average resilience scores, there is a large number of children that fall below this mark, indicating a need for promotion of resilience and resilience-based factors.

Though the sample size was small and only a small portion of children responding identified as Black, Asian, Samoan, or other, the two most common races identified in the project were Hispanic and White. The average score of white children was 31.69, while the average score of Hispanic children was 26.42, which falls into the lowest quartile. Hispanic children may be at higher risk of experiencing adverse events as opposed to white children. A study analyzing data from the 2011-2012 National Survey of Children's Health found that adverse childhood experiences occurred more often in Hispanic and Black children than in white children (Slopen et al., 2016). Research seeking to understand how this impacts resiliency in Hispanic children is needed. This research addressed existence of vulnerability factors, but knowing about the existence of protective factors may be more beneficial than vulnerability

factors alone (Slopen et al., 2016; Lavoie et al., 2016). It is also worth noting that the overall average score of children during the project was 29.6, which is below the identified national average score of 32 by the CD-RISC manual. This may be due to several factors including the fact that the national average is calculated based on adult and child respondents. This project was also completed during a global pandemic, and it poses the question as to whether COVID 19 could have impacted responses of children.

Only a small portion of children were identified as having a mental health diagnosis independent of this screening tool. Only 11 out of the 39 children scoring in the lowest quartile had a mental health diagnosis on their problem list or had a current referral to a mental health provider according to their visit summary. This indicates that low resilience may be present prior to the development of anxiety, depression, or other mental health problems, but it may place these children at significant risk if it is not addressed appropriately.

The promotion of resilience is beneficial in all children and adolescents. Current practice at well child visits includes multiple intake forms at the beginning of their visits. It is important not to implement a task that would overwhelm the child or parent thus potentially resulting in inaccurate reporting. If paperwork burden is a concern, it is possible that all children and adolescents should receive resources about resilience during their well visits even if screening is not performed, as these resources are easily accessible and easy to use and understand, such as the tools through the Harvard Center on the Developing Child.

In the future, follow up to this project is recommended to review the outcomes of and identify potential interventions to strengthen resilience. This project successfully indicated that screening for resilience is feasible and can serve as an important tool for health promotion in adolescents. With this information, it would be useful to review the literature to determine if

there is a specific resilience-based intervention that could be implemented in the clinic or that may exist in the community. Identification of interventions and tools to be provided to children and their parents to promote resilience would aide in the concept of strengths-based health promotion and the provision of primary preventative care.

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