An Integrated Pediatric Primary Care Model to Address Trauma, Inequities and Health Disparities

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Abstract

Background: Toxic stress in the form of adverse childhood experiences (ACE) and unmet social determinants of health (SDoH) are prevalent issues in the pediatric population and remain a cause of concern. Evidence reveals unmet SDoH and ACEs impact childhood health and wellness, predisposing pediatric patients to poor health outcomes. Evidence supports the usefulness of screening for ACEs and SDoH. Currently, many pediatric primary care providers do not routinely assess for ACEs or SDoH.

Purpose: The goal of this quality improvement (QI) project was to improve the health and wellness of children. We sought to increase identification of children ages 1 to 18 with ACEs and SDoH in the pediatric primary care setting.

Intervention: The care model implemented included education for clinicians, screening for ACEs and SDoH using the Pediatric ACEs and Related Life Events Screener (PEARLS) tool, administration of resources, referral, and documentation in the EHR with a Dot Phrase. Screening for depression with the PHQ-9 tool was completed simultaneously. The project was implemented over a three-month period.

Results: The provider and staff successfully and completely implemented the care model. We noted 34 patient visits having 100% compliance with screening, resource administration, and use of Dot Phrase. Correlations between the ACE and SDoH scores and the PHQ-9 score were noted; for every one-point increase in ACE and SDoH, the PHQ-9 increased by 1.62 and 1.8 units, respectively.

Conclusions: Routine, standardized screening for ACEs and SDoH with a valid tool, should be implemented in pediatric primary care. This process should be coupled with PHQ-9 screening. Assessing and treating ACEs early, coupled with assistance addressing unmet social needs resulted in improved identification of ACEs and SDoH.

Keywords: toxic stress, pediatrics, family practice, social determinants of health, adverse childhood experiences, routine screening

An Integrated Pediatric Primary Care Model to Address Trauma, Inequities and Health Disparities

Nursing and medical science in the past two decades, have provided evidence which increasingly supports the notion of adverse childhood experiences affecting long-term health (Bethell et al., 2014; Bright et al., 2015; Campbell, Walker, & Edege, 2016; Felitti et al., 1998; Flaherty et al., 2013; Kalmakis & Chandler, 2015; Sonu, Post, & Feinglass, 2019). Adverse Childhood Experiences (ACEs) is a phrase coined by Felitti et al. (1998) in a landmark, sentinel study which suggested correlation between traumatic childhood events and poor adult health. Felitti et al. (1998) noted that among their sample of 13,494 adults, 52% reported experiencing at least one adverse event in their childhood and 6.2% reported experiencing four or more adverse events. Twenty years of research and data collection has supported this original correlation and supports the theory that traumatic events in childhood predisposes an individual to many different health problems, maladaptive coping mechanisms, and poor development in exposed populations (Bethell et al., 2014; Bright et al., 2015; Campbell, Walker, & Edege, 2016; Felitti et al., 1998; Flaherty et al., 2013; Kalmakis & Chandler, 2015; Sonu, Post, & Feinglass, 2019). Health problems associated with traumatic life events include depression, suicide attempts, heart disease, chronic obstructive pulmonary disease, and alcoholism, to name a few (Felitti et al., 1998; Flaherty et al., 2013; Kalmakis & Chandler, 2015). Current evidence continues to support the association between ACEs and poor health (LeMoult et al., 2020; Sonu, Post, & Feinglass, 2019; Takur et al., 2020), however, new evidence also supports the notion of ACEs and Social Determinants of Health (SDoH) dually contributing to poor health (Stahl & Sims, 2018).

Social Determinants of Health influence the health status of everyone in a population. Healthy People 2030 addresses the importance of social determinants and the effect they have on health, economic stability, education access and quality, health care access and quality, neighborhood environment, and social/community context are the five categories of SDoH which all impact the overall health of an individual (Healthy People 2030, 2021). The presence of food insecurity, housing insecurity,

and health insecurity coupled with a family unit's overall economic stability influence the health and wellness of all family members (Healthy People 2030, 2021; Higginbotham, Crutcher, & Karp, 2019; Koita et al, 2018). There is foundational and growing evidence which supports the notion that unmet SDoH have adverse impacts on pediatric health (Koita et al., 2018; Melchior et al., 2012; Russell, Ford, & Russell, 2015; Sagiv et al., 2013).

The American Academy of Pediatrics (AAP) supports pediatric and family practice providers with guidelines for the health supervision of pediatric patients; Bright Futures is the program which serves as this guide (Hagan, Shaw, & Duncan, 2017). The Bright Futures program provides knowledge and information about tracking development, disease prevention (e.g., immunizations), routine screening, and anticipatory guidance (Hagan, Shaw, & Duncan, 2017). The AAP supports the idea of routine screening for ACEs and SDoH; however, there is a lack of evidence in support of a specific, standardized screening instrument (Barnes et al., 2020; Garner & Shonkoff, 2012). Evidence reveals that 96% of pediatric providers do not, routinely screen for ACEs (Kerker et al., 2016). Of the 4% of total pediatric providers who routinely screen for ACEs, only four percent of those routinely ask about all of the ACEs (Kerker et al., 2016). Inability to screen for ACEs results in a lack of recognition and observation of physical, mental, and social trauma and neglect (Kerker et al., 2016). With a mandate to screen but no direction, many providers are left with questions related to implementation of routine screening. The Pediatric ACEs and Related Life-events Screener (PEARLS) is a validated tool created by Center for Youth Wellness and University of California- San Francisco which simultaneously screens for ACEs and SDoH (Thakur et al., 2020).

Review of Literature

Adverse childhood experiences and social determinants of health have a remarkable impact on lifelong health and wellness, however there is also a significant influence on childhood health (Campbell, Walker, and Edege, 2016; Felitti et al., 1998; Kalamakis & Chandler, 2015; Koita et al., 2018; LeMoult et

al., 2020; Melchior et al., 2012; Russell, Ford, & Russell, 2015; Sonu, Post, & Feinglass, 2019; Stahl & Sims, 2018; Sagiv et al., 2013; Thakur et al., 2020). Appropriate screening and intervention in the primary care setting can mitigate adverse mental and physical health outcomes due to past trauma (Koita et al., 2018; Thakur et al., 2020).

ACEs Effects on Health

Felitti et al. (1998) established that those individuals with four or more adverse events in childhood were at increased risk for poor health outcomes. For those in the sample who experienced four or more adverse events, they were 2.2 times more likely to have cardiovascular disease, 3.9 times more likely to have chronic obstructive pulmonary disease, 12.2 times more likely to have attempted suicide, and 10.3 times more likely to have used intravenous drugs (Felitti et al., 1998). Campbell, Walker, and Edege (2016) noted in a sample of 48,526 American adults, 55.4 % reported at least one ACE and 13.7 % reported having experience four or more ACEs, which validates Felitti et al. (1998) findings. Further research suggests that ACEs are dose dependent and individuals with four or more ACEs are at greater likelihood for physical and mental health problems as well as maladaptive coping mechanisms and adverse behaviors (e.g., tobacco use, drug use, etc.) (Campbell, Walker, and Edege, 2016; Felitti et al., 1998; Kalamakis & Chandler, 2015).

Purewal et al. (2016) note the influence ACEs have on the psychosocial, mental, and physical body system. This influence results in overstimulation of the autonomic nervous system which leads to an alteration in the regulation of the hypothalamic-pituitary-adrenal (HPA) axis (Purewal et al., 2016). This alteration causes dysregulation of the endocrine and immunologic systems, thereby causing chronic inflammation (Purewal et al., 2016). Contrasted with the positive stress response or the normal physiological response to stress, known as the fight or flight response, the toxic stress response is the method by which ACEs contribute to poor health (Purewal et al., 2016). The alteration of the HPA axis causes the brain's response to stimuli to be out of proportion from normal efforts to insure

homeostasis. When this becomes chronic and sustained physical and mental distress occur (Kalamakis & Chandler, 2015). Further evidence supports the notion of epigenetic changes including alteration of DNA structure and gene expression caused by stress interaction (Park et al., 2019). This is an important factor because essentially, chronic stress is changing the genomic structure and in theory, influencing future generations.

A growing amount of evidence supports the notion that effects from toxic stress and adverse events not only affect adulthood, but also cause problems in adolescence (LeMoult et al., 2020; Purewal et al., 2016). Bethell et al. (2014) noted that 48% of American children had experienced at least one ACE. Further estimation calculated a potential of approximately 35 million children nationwide who had experienced at least one ACE. Children with existing chronic health conditions were more likely to have experienced an ACE (Bethell et al., 2014). Dental health among children with one ACE is likely poor, children with multiple ACEs had an odds ratio of 1.61-2.55 for the likelihood of having dental caries (Bright et al., 2015). In terms of school performance, children with two or more ACEs were 2.67 times more likely to repeat a grade in school when compared to children without ACEs (Bethell et al., 2014). In contrast Bethell et al. (2014) noted that children without a history of ACEs had 2.59 greater odds of being successfully engaged and ready to learn in school. Brown et al. (2016) observed that children with attention-deficit hyperactivity disorder (ADHD) have higher ACE exposures when compared to children without ADHD. LeMoult et al. (2020) noted in a recent meta-analysis that children with exposure to early life stress or ACEs were 2.5 times more likely to develop depression than were children with no history of ACEs.

SDoH Effects on Health

There is sound evidence which supports the notion that SDoH influence childhood health and wellness. Unmet SDoH and poverty have negative effects on both childhood and lifelong health; these unmet needs create an international impact (Marmot et al., 2008). Marmot et al. (2008) note that

health differences and disparities among groups of poor individuals is the result of an unfair imbalance known as health inequity. The health inequities created by this social construct of poorness and poverty results in a life of poor health and early death in those with unmet SDoH (Gitterman et al., 2016; Healthy People 2030; Marmot et al., 2008). Fierman et al. (2016) further observed that children living in poverty suffer increased rates of delayed mental development and poor overall health. The poor overall health results continue into adulthood and gives rise to higher incidence of heart disease, diabetes, and depression (Fierman et al., 2016).

Among the many health problems caused by unmet SoOH, there is significant evidence regarding associations between unmet SDoH and ADHD. Melchior et al. (2012) noted in a birth cohort study that eight-year-old children with food insecurity had a 100% increase in ADHD diagnosis. Sagiv et al. (2013) note that socioeconomic factors like household income served as positive predictors of ADHD diagnosis. Gitterman et al. (2016) expand on the notion of poverty contributing to poor mental health. Russell, Ford, and Russell (2015) provided evidence which supports the theory of unmet SDoH impacting pediatric health and increasing the odds of developing ADHD. Financial difficulties, living in public housing, and children with young or single mothers were among the noted correlates; of these, financial difficulties were the strongest predictor of poor mental health (Russell, Ford, & Russell, 2015). Children with socioeconomic hardship and those who experienced neighborhood violence had increased odds ratios, 1.39 and 1.47, respectively, of being diagnosed with ADHD (Brown et al., 2016). While many sources provided associate unmet SDoH with ADHD, it is of upmost importance to note this is not a singular issue. ADHD as a mental health diagnosis was merely highlighted as an example of the grave effect unmet SDoH have on overall health.

Unfair disadvantages based on race have substantial impacts on the health of children (Trent, Dooley, & Douge, 2019). Trent, Dooley, and Douge (2019) note racism and health disparities based on issues related to racism are a core causative factor for health inequity. Unmet SDoH effect health and

wellness and can lead to a multitude of health problems including heart disease, diabetes, poor development, depression, and suicidality (Fierman et al., 2016; Gitterman et al., 2016; Sokol et al., 2019). Gitterman et al. (2016) observed that unmet SDoH predispose children to toxic stress which culminates into an array of health problems previously noted and those sequelae from toxic stress extend from childhood into adulthood (Fierman et al., 2016; Gitterman et al., 2016; Sokol et al., 2019).

Screening for ACEs and SDoH

Kerker et al. (2016) noted that out of a sample of pediatric providers only 33% routinely questioned about ACEs and a mere 4% asked about all measurable ACEs. The AAP recommends clinicians actively work to decrease the prevalence of ACE related health disparity by screening for these events (Barnes et al., 2020; Garner & Shonkoff, 2012). There is a lack of evidence which supports routine and universal screening using a validated instrument, rather providers have been left to choose. By giving providers the ability to assess by traditional means leaves the potential for underdiagnosis and underreporting (Koita et al., 2018). Evidence supports routine and universal screening in the pediatric population for ACEs and SDoH (Barnes et al., 2020; Brown et al, 2016; Glowa, Olson, & Johnson, 2016; Fierman et al., 2016; Flaherty et al., 2013; Koita et al., 2018; Oral et al., 2016). The CYW and UCSF PEARLS tool can be implemented for screening for adversity, trauma, and inequities in the pediatric, primary care setting (Koita et al., 2018).

Provider Interventions

Screening for SDoH and ACEs are only one part of the process and serves as the starting point. The information obtained from screening must first be scored, interpreted, and then used to assess risk for health consequences. The provider is charged and responsible for responding to positive screens in a manner by which the patient's needs are met. By screening and responding to positive screens the provider maintains an ethical and patient centered practice (Sokol et al., 2019). Purewal et al. (2016) note the importance of developing an integrated model. This type of model includes education,

screening, referral, and treatment for ACEs, emphasizing the importance of not only screening but addressing the assessed problems (Purewal et al., 2016).

Mounting support and evidence for integrated processes is evident in the literature, obliging pediatric primary care providers to address the assessed traumas, social inequities, and health disparities (Purewal et al., 2016; Rairden et al., 2021; Sokol et al., 2019). Information obtained through screening and assessments should be shared with patient and their caregivers/parents, emphasizing the importance of positive health experiences and habits (Purewal et al., 2016; Rairden et al., 2021; Sokol et al., 2019). Referrals to community services, mental health providers, community partners, and other specialties not provided in the primary care office are supported in the literature (Purewal et al., 2016; Rairden et al., 2021; Sokol et al., 2019). Development of an integrated model to include screening, referral, and treatment is both best practice and most ethical in terms of maintaining a patient centered approach.

Methodology

Purpose

The overall purpose of this quality improvement project was to create and implement an integrated care model to address ACEs and SDoH in a pediatric clinic. Addressing these traumas and inequities is supported in the literature and serves to improve the overall health of the children and adolescents who receive their primary care at the implementation clinic.

Participants

The provider and office staff at a small pediatric, primary care clinic in the piedmont of North Carolina were the participants in this quality improvement project. The sample is the office staff and providers involved with implementing the integrated care model. The participants included medical assistants and providers.

Measures

The primary outcome is that all providers at the implementation site screened for ACEs and SDoH at well visits for children ages 1-18 years using the PEARLS tool. The screening and intervention completed by providers were documented in the EHR with a specific dot phrase, ensuring that the standard of care is set and upheld. A secondary outcome is that the providers will offer referral to mental health resources (e.g., counseling, therapy, and psychiatric care) and community resources (e.g., food banks, housing support) to patients with positive screens. Clinic staff and providers alike who worked with this integrated care model for three months have the unique knowledge of the parts of the model which worked well and parts which require improvement, feedback served as a process measure.

Project Design

A mixed-method approach was simultaneously utilized to analyze the primary and secondary outcomes as well as the process measures associated with the implementation of this care model.

Quantitative

Descriptive statistics were used to evaluate the primary and secondary objectives. Linear regressions were used to analyze if associations between ACE score, SDoH score, and PHQ-9 score were statistically significant. Statistical significance was set as a p <0.001.

Qualitative

Feedback from the participants involved in the implementation of the care model was sought. A thematic analysis of the feedback was performed to identify common themes and ideas generated as a result of the implementation. An important dynamic used in reporting and disseminating results of implementation studies is the qualitative analysis.

Intervention

The intervention is an integrated care model designed to screen, assess, and respond to patients with ACEs and unmet SDoH. Implementation of the care model began with education for the participants. The education was presented in a PowerPoint presentation which included information

about ACEs and SDoH, as well as the implications they have on health and wellness. The AAP's Trauma Toolkit for Primary Care, the Centers for Disease Control, Healthy People 2030, and the TRIADS Framework were sourced to create the educational component (AAP, 2020; CDC, 2021; Healthy People 2030, 2021; UCSF, 2022).

The care model implementation began with provider education and expanded into practice with the implementation of the routine screening with the CYW and UCSF PEARLS tool to all pediatric patients. The tool was administered to all children aged 1 to 18 within this population; parents reported for patients ages 1-11 and patients over the age of 12, self-reported. Any questions or concerns expressed by the patient/caregiver were initially managed by the office staff, who were also responsible for insuring instrument completeness. The PEARLS instrument was then scanned into the EHR by the clinic staff. The providers (physician or nurse practitioner) reviewed and interpreted the results of the screening tool. Education and further intervention were provided to the patient by the provider using custom brochures. The brochures included information about ACEs and SDoH and were published on a fifth grade reading level. The brochures were published in both English and Spanish. The information included important takeaways serving as reminders after the visit. The brochures also included resources, local to the implementation site, which serve to meet immediate needs like domestic violence assistance, shelter, food, and substance abuse help. A custom Dot Phrase was then used for all PEARLS encounters by the provider to ensure accurate documentation of the care model was demonstrated in the EHR. This implementation was done over a three-month period.

Data Collection and Management

Data Collection was performed post-intervention by means of EHR review. Safe and secure data management was upheld by limiting access of data to only key stakeholders and advising faculty. The data was stored on a secure and encrypted hard drive. Data was analyzed with the Intellectus Statistics® software program.

Ethical Considerations

Institutional Review Board (IRB) approval was obtained. The IRB board at Lenoir-Rhyne University in Hickory, North Carolina received request to review this project for ethical considerations, and the project met exemption standards based on the quality improvement nature of the project. Current standards of care were provided at all times. Data collection occurred in a retrospective fashion. Data stored was de-identified and stored without patient sensitive information.

Results

The participants, the provider and clinic staff, successfully screened all patients presenting for wellness visits and as demonstrated in Table 1 and used the provided dot phrase to document within the encounter note. During this three-month implementation, 34 patients were screened using the PEARLS tool, and out of these 79% (*n*=27) were screened with the PHQ-9 tool. Only those patients over the age of 12 received the PHQ-9 screening. Eight associated diagnoses were made, and 8.8% (*n*=3) of patients were referred to specialty services. In addressing the primary objective, we note full compliance with all aspects of the protocol; all screens were complete and all EHRs of patients with screens were evident for use of the dot phrase. The data presented in tables one and two illustrate the how this project met primary and secondary outcomes.

Table 1

Frequency Table for Nominal Variables

Variable	*n*	*%*
Use of Dot Phrase		
Yes	34	100.00
Missing	0	0.00
Distribution of Resources		
Yes	34	100.00
Missing	0	0.00
Depression Diagnosis		
no	30	88.24
yes	4	11.76
Missing	0	0.00

Suicidality Diagnosis		
no	33	97.06
yes	1	2.94
Missing	0	0.00
Sex		
F	29	85.29
M	5	14.71
Missing	0	0.00
Referral		
No	31	91.18
Yes	3	8.82
Missing	0	0.00

Note. Due to rounding errors, percentages may not equal 100%.

An important part of this care model protocol was the administration of the Patient Health Questionnaire 9 (PHQ-9). The PHQ-9 is a standardized screening tool which is an integral tool used in diagnosing depression. The clinicians at the implementation site screened adolescents age 12 and over with this tool. Table two demonstrates descriptive statistics of the ratio variables collected. Of the 34 patients screened, 79% (*n*=27) received PHQ-9 screening simultaneously. Again, it should be noted that only those patients aged 12 and over received the PHQ-9 screening, due to the requirements of that particular tool.

Table 2

Summary Statistics Table for Interval and Ratio Variables

Variable	*M*	*SD*	*n*	SE_M	Min	Max	Skewness	Kurtosis
ACE Score	0.94	2.06	34	0.35	0.00	8.00	2.62	5.97
Age	12.76	2.93	34	0.50	7.00	18.00	-0.24	-0.84
SDoH score	0.53	1.46	34	0.25	0.00	6.00	3.22	9.31
PHQ-9 Score	3.26	4.76	27	0.92	0.00	18.00	1.48	1.52

Note. '-' indicates the statistic is undefined due to constant data or an insufficient sample size.

Linear regression analyses were conducted to assess what relationship ACE scores and SDoH scores had, if any, on the PHQ-9 scores. ACE Score significantly predicted PHQ-9 score, B = 1.62, t(25) =

5.96, p < .001. This indicates that on average, a one-unit increase of ACE score increased the value of PHQ-9 score by 1.62 units. Similarly, the SDoH score significantly predicted PHQ-9 score, B = 1.80, t(25) = 3.86, p < .001. This indicates that on average, a one-unit increase of SDoH score increased the value of PHQ-9 score by 1.80 units. Tables three and four demonstrate the results of the regression models.

Table 3

Results for Linear Regression with ACE Score predicting PHQ-9 Score

Variable	*B*	*SE*	95.00% CI	β	*t*	*p*
(Intercept)	1.34	0.68	[-0.06, 2.74]	0.00	1.97	.060
ACE Score	1.62	0.27	[1.06, 2.18]	0.77	5.96	< .001

Note. Results: $F(1,25) = 35.52$, $p < .001$, $R^2 = .59$
Unstandardized Regression Equation: PHQ_9_Score = 1.34 + 1.62*ACE Score

Table 4

Results for Linear Regression with SDoH score predicting PHQ-9 Score

Variable	*B*	*SE*	95.00% CI	β	*t*	*p*
(Intercept)	2.06	0.80	[0.41, 3.71]	0.00	2.57	.017
SDoH score	1.80	0.47	[0.84, 2.76]	0.61	3.86	< .001

Note. Results: $F(1,25) = 14.91$, $p < .001$, $R^2 = .37$
Unstandardized Regression Equation: PHQ_9_Score = 2.06 + 1.80*SDoH score

Qualitative data are indispensable in terms of analyzing a protocol, especially when they are available (Giardino, 2017). The office staff and provider were screened with four questions about the quality of the protocol and their thoughts about long-term sustainability. The clinic staff and providers implemented this care model with minimal impact to their established workflow, as stated by all participants. The following questions were asked of all participants in the clinic. In terms of ease of implementation and the overall feelings associated with the care model the staff involved in the implementation of this protocol had positive thoughts. When asked about feelings toward implementing the tool one participant mentioned:

> *The tool and the resources were very instrumental in assessing patients for mental health needs and in certain circumstances resulted in prompt psychiatric interventions that may not have been previously identified.*

When asked about feelings associated with talking to patients about sensitive subjects like trauma, ACEs, and SDoH, one participant in our implementation study reflected:

> *The tool allowed me to have increased open communication with patients, especially with discussing positive results and then formulate a mutually agreed upon plan for intervention and treatment.*

The providers involved were also asked about the long-term sustainability of this care model. One participant shared the following:

> *The tool continues to be used as a method of screening for social determinants of health and for mental health disorders in the pediatric setting, therefore it has become part of practice; the resources will need to be updated over time, but this is to be expected…*

When asked about negative experiences associated with this implementation, most stated no issues noted, however one expressed the following:

> *"When translating the form, some parents would make a comment that the child was lazy and not depressed. So, this required more explanation."*

Exemplar Case

A 12-year-old Hispanic male presented for a wellness visit with complaints of depression. Following PEARLS and PHQ-9 screening, with the use of some of the competencies reviewed in the educational component of this protocol, the provider and staff promptly responded to this patient who was in need of immediate referral. With an ACE score of 4 and a PHQ-9 score of 12, the patient admitted to current suicidal ideations stating, "I wish I wasn't here," and revealed a plan to stab himself in the chest. The patient was provided with immediate referral and transportation to a pediatric emergency

room with capabilities of treating an adolescent with active suicidal ideations. The patient's EHR had the protocol Dot Phrase present in the plan. The plan principally addressed the patient's suicidality. The plan was also evident for information which will serve the provider and the patient well at future follow-up visits. The information included was primarily aimed at reducing any future affects this patient's previous ACEs and unmet SDoH may have.

Discussion

Quality Improvement and Implementation Science provide systematic approaches which improve the health and wellness of individuals by focusing on system problems and using evidence-based interventions to improve on those inequities (Giardino, 2017). This project sought to improve the health of pediatric patients by improving practice related to understanding, assessing, acknowledging, and responding to adverse childhood experiences and unmet social determinates of health. Feasibility of implementation of screening models remains a prevalent point of contention in the literature. Many authors note providers personal apprehension and anxiety when considering questioning patients and their families about trauma, ACEs, and SDoH (Kerker et al., 2016; Rariden et al., 2021). As noted in our data analysis, this protocol gave the providers an opportunity to address these issues with little apprehension and anxiety.

A specific measure analyzed was the simultaneous use of the PHQ-9 screening. This screening was in place for wellness visits at the implementation clinic at the start of this quality improvement protocol. The results of the PHQ-9 screening were included to analyze if correlations could be made regarding the simultaneous administration with the PEARLS tool. It should be noted that the results are merely correlational and do not necessarily indicate causative effects. We observed during analysis that for every one-point increase in ACE score or SDoH score, the PHQ-9 score increased, see tables three and four. These results confirm the evidence which supports the notion of adverse childhood experiences and unmet social determinants of health impacting childhood health and wellness (Fierman

et al., 2016; Gitterman et al., 2016; Healthy People 2030, 2021; Higginbotham, Crutcher, & Karp, 2019; Koita et al, 2018; Marmot et al., 2008; Sokol et al., 2019). The significant correlation ACE and SDoH scores had on the PHQ-9 should not be modulated, rather future implementation studies should consider implementing both the PEARLS tool and the PHQ-9 tool into routine practice.

Healthy People 2030 (2022) recognizes discrimination as a crucial issue affecting social determinants of health, particularly in regard to social and community interactions. Trent, Dooley, and Douge (2019) note the profound effect racism, as a social determinant of health, has on health and wellness of children and adolescents. Racism, specifically structural racism, is experienced by children through where they live, where they are educated, the economic means, and whether their rights as citizens are protected or neglected (Trent, Dooley, & Douge, 2019). This quality improvement project was implemented at a clinic which primarily serves Hispanic and other racial/ethnic minority patients in the community. This is a unique component of this project since most of the patients screened were of Hispanic descent and all were in racial and ethnic minorities. The data obtained from this project does not necessarily represent the minority community, however 11.7% (*n*=4) reported having experienced discrimination on the SDoH portion of the PEARLS tool. While this number is small, it is critical to understand the impact this has on the patient population. In continuing to plan for ongoing implementation, emphasis should be placed on reducing the effects institutional, personal, and implicit racism have on health and wellness.

Wheeler and Phillips (2019) note the importance of incorporating trauma (ACEs and unmet SDoH) and resiliency competencies in nursing education. This project focused on trauma-informed care by educating the providers to recognize, respond, and refer trauma victims in a supporting and caring manner. Kia-Keating et al. (2019) note the importance that training has on implementation of an integrated care model. Without continued competence in trauma and resiliency, clinicians jeopardize the care delivered to patients who have experience these inequities (Duffee et al., 2021; Wheeler &

Phillips, 2019). Trauma and resiliency competencies lead to an enlightened and prepared clinician who has the expertise to respond to sensitive and delicate patient scenarios (Kia-Keating et al., 2019; Wheeler & Phillips, 2019). Screening without response leaves opportunity for poor patient outcomes and continued harm. It is important to use these trauma and resiliency competencies to incorporate patient and family education focused on increasing patient resilience (Kia-Keating et al., 2019). Providers give patients the best opportunity for long-term resilience by promoting protective factors and educating the child or adolescent how to cope with trauma and inequities, while also providing them with resources aimed at increasing equity (Kia-Keating et al., 2019; Purewal et al., 2016).

Conclusion

Adverse Childhood Experiences and unmet Social Determinants of Health will continue to disrupt the health and wellness of individuals if further steps are not taken to assess and treat these traumas and inequities. The use of standardized and routine screening is supported in the literature, (Thakur et al., 2020; Koita et al., 2018; Sokol et al., 2019; Purewal et al., 2016; Barnes et al., 2020; Glowa, Olson, & Johnson, 2016; Flaherty et al., 2013; Oral et al., 2016) and should be implemented in clinics which care for pediatric clients. The simultaneous use of the PHQ-9 should be implemented as a means of effectively assessing for mental health. Assessing and treating ACEs early, coupled with assistance in addressing unmet social needs will lead to improved outcomes, both currently and in later life.

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