2023

The HEADS-ED: a psychosocial screening for pediatric patients in emergency departments: a systematic review

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THE HEADS-ED: A PSYCHOSOCIAL SCREENING FOR PEDIATRIC PATIENTS IN EMERGENCY DEPARTMENTS: A SYSTEMATIC REVIEW

A clinical dissertation submitted in partial satisfaction

of the requirements for the degree of

Doctor of Psychology

by

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June, 2023

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DEDICATION

This dissertation is dedicated to my loudest cheerleader, biggest advocate, greatest supporter, and fiercest friend. I would not be who or where I am without you, mom.

ACKNOWLEDGEMENTS

This dissertation would not have been possible without the unwavering love, support, and encouragement I have received from my amazing mentors, friends, and family. First and foremost, I would like to thank Dr. Susan Hall, who has gone above and beyond to guide, encourage, and mentor me throughout my entire graduate career. Dr. Hall, no words will suffice to thank you for all of the time, energy, and effort you have spent reviewing my materials, providing your feedback and insight, and supporting me through all of my academic and professional endeavors. It has been an absolute joy and honor to learn from you, and I admire you so much. I look forward to the many years ahead of collaboration and mentorship.

I would also like to express my gratitude for Dr. Veronica Viesca, who has provided continued guidance from the beginning of this dissertation process. Furthermore, I am so deeply thankful for my incredible research assistant, Lori Beth Infield. Thank you, Lori Beth, for all of the time, dedication, effort, creativity, you selflessly offered throughout each phase of this process, particularly through our development of the rigorous coding system and process.

There are also no words to express my gratitude for Dr. Kathleen Eldridge, who has walked beside me faithfully and tirelessly through each step of my journey. Dr. Eldridge, thank you for supporting me in such intentional ways, for always believing in me, and for encouraging me when I need it most. I treasure your steadfast care and mentorship.

To my East Coast family – Uncle Robbie, Auntie Elaine, Kathryn, Andrew, and Nana – I would not have made it through the last six years without your texts, phone calls, cards, and care packages. Even from 3000 miles away, you have made me feel supported and cared for in so many ways. Nana, thank you for always reminding me that I am loved and capable of anything I set my mind to in life. Carly and Susan Poynter, your friendship and loyalty are unmatched. Our

mother-daughter travel adventures, birthday celebrations, and holiday traditions have made life so much fuller.

My incredible friends, colleagues, and cohort have made this journey so memorable. Thank you, Allyson, Kate, and Shir, for the joy, laughter, and bond we share. You all are such immense blessings. I am also extremely grateful for my Irvine crew, Allyson, Irvin, and Megan. Thank you all for the early morning coffee runs before supervision, brunch celebrations after big milestones, and meaningful conversations. These are memories I will cherish forever. To all other members of Team Jessie – I cannot thank you enough for cheering me on the last six years.

My beloved dad and sister shaped me into the person and professional I am today. Dad, thank you for always modeling ambition, generosity, and humility, pushing me to be the best version of myself, and reminding me of how proud you were. Your words of love, wisdom, and encouragement will echo in my heart forever. Kelsey, you were my very first best friend and ally. It was the greatest honor and privilege to love you and share a bond with your beautiful soul. You will always be intertwined into every aspect of my research and advocacy.

Mom, my gratitude for you goes beyond words. You have been my rock and shield through the both the happiest and most trying times of life. I will continue to look to you for what it means to embody courage, poise, and perseverance as a professional, mom, and daughter. Whether it was through homecooked meals, encouragements on post-it notes, or late-night proofreads, you have always given me all that I need to pursue my dreams.

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ABSTRACT

The rates of mental health (MH) conditions among the pediatric population are rising steadily (Abramson, 2022; Clark et al., 2019). Given that MH symptoms and concerns frequently present in the emergency department (ED) – particularly since the onset of the COVID-19 pandemic – the ED setting may be a practical and effective setting to implement screening measures to identify youth at risk for mental illness and suicide (Leeb et al., 2020; Leff et al., 2021). This integrative systematic review examined the extent to which the HEADS-ED, one specific psychosocial screening measure, has been administered in the ED setting with youth and which healthcare professionals (HCPs) have administered this measure. Furthermore, the authors examined three secondary research questions addressing the potential ability of the HEADS-ED to (a) be implemented universally in the ED and to detect MH symptoms among the pediatric population, (b) assist with disposition planning, and (c) impact policy standards. Following PRISMA guidelines, the authors identified four articles that met inclusion criteria and passed quality appraisal from a total of 1,132. Findings revealed the HEADS-ED has been administered by ED physicians and crisis workers in the ED with youth presenting with MH concerns (Cappelli, Gray, et al., 2012; Cappelli, Zemek, et al., 2020; Leon et al., 2019; MacWilliams et al., 2017). The HEADS-ED can detect MH symptoms and provide targeted treatment recommendations. The authors discuss these findings in the context of practice, policy, and future research, highlighting the need for continued efforts to close the gap between MH assessment in the ED and follow-up care.

Chapter 1: Introduction

Statement of the Problem

Pediatric Mental Illness

Current research suggests that approximately 10-20% of children and adolescents between the ages of 5 and 18 struggle with mental health (MH) issues in the United States (Kaushik et al., 2016). Further evidence indicates that 12.6% of youth between the ages of 4 to 17 have had significant MH disorders that require intervention to reduce impairment in functioning (Clark et al., 2019). For example, the lifetime prevalence of depression among the pediatric population in the United States is between 11% and 14%, and most adults who suffer from depression experienced their first episode during childhood or adolescence (Chun et al., 2013; Mendelson & Tandon, 2016). In fact, research has demonstrated that 75% of mental illness diagnoses begin to arise during adolescence or early adulthood, with most diagnoses having onset before the age of 24 (Solmi et al., 2020; Tortella-Feliu et al., 2019).

According to an analysis of the 2016 National Survey of Children's Health, the prevalence of MH disorders among children and adolescents differs based on various demographic and sociocultural factors such as age, race, and socioeconomic status (Devitt, 2019; Whitney & Peterson, 2019). For example, children between the ages of 12 and 17 are 65% more likely to experience a MH disorder compared to those between the ages of 6 and 11, and non-Hispanic White children were almost twice as likely to be diagnosed with a MH disorder as non-Hispanic Black children (Devitt, 2019). Additionally, research suggests that social and cultural factors such as exposure to poverty and violence play a significant role in the onset of major depression in both children and adolescents globally (Devitt, 2019). Poverty, violence, systemic racism, and other stressful social environments are not unique or specific to any nation or county;

however, sociocultural factors such as socioeconomic status or country of origin are often linked to race or ethnicity and can increase the likelihood of exposure to these stressors (Devitt, 2019).

Limited Monitoring of Pediatric MH

Despite research that recognizes the prevalence of MH issues in youth and the importance of early detection and intervention, MH disorders in children and adolescents often go undetected for many years (Cappelli, Gray, et al., 2012; Chun et al., 2013). Specifically, approximately 50% of adolescents ages 13-17 receive specialized MH care, even when they portray or report symptoms of mental illness (Clark et al., 2019). Additionally, approximately one in 6 children under the age of 13 receive individualized psychiatric care (Clark et al., 2019). Therefore, it is apparent that some children and adolescents may not receive the MH treatment they need. Unmet MH needs are particularly high among children under six years, children of color, and the uninsured (Kataoka et al., 2002).

In fact, Horowitz, Ballard, et al. (2009) found that nearly 60% of youth in need of MH care services do not receive the care they need, even after a serious suicide attempt. This statistic is especially concerning since research firmly indicates that suicide attempts and ideation are strong risk factors for future attempts and completed suicides. Additionally, suicide attempts, suicidal ideation, and other forms of self-harm are also associated with poorer functioning and psychological problems, including substance use, depression, violence, academic difficulties, peer problems, and family difficulties (Babeva et al., 2016).

Unfortunately, although many of these variables and risk factors may be amenable to intervention, the lack of early detection and intervention has led to detrimental and fatal implications for some youth (Babeva et al., 2016). In addition to the risk of suicide, youth with mental illness may experience more physical and sexual health complications compared to peers

who do not experience MH issues or disorders. Behavioral health problems that are left untreated during childhood may also contribute to more severe psychopathology in adolescence and adulthood (Fein et al., 2010).

Some barriers to receiving treatment intervention include socioeconomic inequality and the stigma of mental illness. For example, structural limitations such as distance from appropriate treatment centers, lack of linguistically and culturally responsive treatment interventions, and financial constraints may prevent children and families from seeking MH treatment (Mendelson & Tandon, 2016). Additionally, Horowitz, Ballard, Teach, et al. (2010) demonstrated the prominence of attitudinal limitations among the pediatric population. More specifically, they screened pediatric patients for suicide risk and found that many patients who endorsed suicidality or suicidal ideation reported that "lots of kids don't know where to go for help, so they don't get the help [they need]" (Horowitz, Ballard, Teach, et al., 2010, p. 7). These patients also mentioned that it was relatively easier to tell personal fears to a professional or stranger rather than their parents (Horowitz, Ballard, Teach, et al., 2010). Not knowing where to receive MH treatment and not knowing how their parents will respond are only two examples of factors that may prevent children and adolescents from seeking MH treatment (Horowitz, Ballard, Teach, et al., 2010).

Impact of COVID-19 on Pediatric MH

Notably, since the onset of the COVID-19 pandemic, there has been a significant surge in the rates of pediatric mental illness and suicidal behavior (Abramson, 2022; Leeb et al., 2020; Leff et al., 2021). Children and adolescents are having to confront unique developmental and psychosocial challenges such as the stress of lockdowns, intermittent school shutdowns, and loss of caregivers (Dalabih et al., 2022; Yip et al., 2022). The next paragraph provides a brief report

of key studies and actions that have highlighted the specific impacts of COVID-19 on pediatric MH over the last two and a half years.

According to the Centers for Disease Control and Prevention (CDC), there was a 33% increase in pediatric MH diagnoses in the first two quarters of 2021, a 103% increase in suicide rates compared to 2016, and a 50% increase in suicide attempts in females between the ages of 12 and 17 in early 2021 compared to 2019 (Dalabih et al., 2022; Yard et al., 2021). Furthermore, Ann & Robert H. Lurie Children's Hospital of Chicago (2021) facilitated a survey of 1,000 parents around the country in 2020. Their findings revealed that 71% of parents said the pandemic had a negative impact on their child's mental health, and 69% said the pandemic was the "worst" experience their child had endured. Margolius et al. (2020) from the America's Promise Alliance conducted another national survey in June 2020 with 3,300 high schoolers and found close to one-third of students were experiencing feelings of unhappiness and depression more frequently than usual. As a result of these unsettling surges, the Children's Hospital Association, the American Academy of Pediatrics, and the American Academy of Child and Adolescent Psychiatry collaborated and joined in declaring the National State of Emergency in Children's MH in October 2021 (American Academy of Pediatrics, 2021; Dalabih et al., 2022).

COVID-19 has had a disproportionate impact on the MH functioning and treatment of marginalized communities (Dalabih et al., 2022; Yip et al., 2022). Specifically, Yip et al. (2022) examined the relationship between the social determinants of inequity (e.g., socioeconomic status, household income, single-parent households, marginalized racial and ethnic backgrounds) that have been worsened by the COVID-19 pandemic and the negative impacts these have on the functioning of children, regardless of pre–COVID-19 function. While all children have had to face the developmental challenges of this pandemic (i.e., entering adolescence during a time of

global emergency, social isolation, and remote learning), they found that children and families with households with poor social determinants of health are at a higher risk of experiencing COVID-related negative impacts such as financial worry and food insecurity, even though these populations are complying with the same healthcare and social isolation guidelines as their White counterparts (Yip et al., 2022).

The COVID-19 pandemic has contributed to existing challenges regarding access to MH services among children and adolescents from marginalized populations (Dalabih et al., 2022; Golberstein et al., 2020). This pandemic has reinforced and exacerbated longstanding healthcare disparities and inequities. Marginalized populations not only face limited resources but are fearful of medical institutions primarily comprised of White providers (Fegert et al., 2020; Golberstein et al., 2020; Shankar et al., 2022). The intermittent school shutdowns and transitions to telehealth are two major factors that have contributed to increased disparities (Golberstein et al., 2020). Since children from marginalized backgrounds were more likely to receive MH services (in addition to other health services) mostly from school settings prior to the pandemic, their access to MH services has been disrupted completely (Dalabih et al., 2022; Golberstein et al., 2020). Furthermore, these children are less likely to have longstanding relationships with primary care physicians (PCPs), which may impede their ability to gain access to telehealth services or community resources easily or quickly (Golberstein et al., 2020).

Taken together, there is a clear need to enhance the monitoring and detection of pediatric mental health. In order to accomplish the goal of summarizing the need for and components of screening for MH disorders among the pediatric population, this literature review begins by discussing current screening settings for MH disorders. It then reviews risk assessment tools currently used in these settings and highlights the strengths of a specific risk assessment tool

used in emergency departments (EDs). It concludes with a summary of the need for this dissertation's proposed systematic review and presents its research questions.

Overview of Current Research

Potential Settings to Screen All Youth for MH Disorders

Early screening of MH symptoms and disorders is a crucial step in improving the detection of mental illness among youth (Horowitz, Ballard, et al., 2009). Screening may help not only initiate conversations among youth about MH but also provide more timely treatment and MH services. Schools, primary care settings, and EDs all appear to be effective and appropriate settings to screen youth for MH disorders. This section describes each of these potential settings.

Schools. The school system appears to be a logical setting for detecting youth at risk for MH disorders and suicide. Some schools have demonstrated efforts to improve MH awareness through in-service teacher training, suicide awareness curricula, and suicide-screening efforts, which may also serve to prepare faculty and staff to handle MH issues more appropriately (Bowers et al., 2012). One potential benefit of screening in the school system is that it is both accessible and feasible since children are required to attend school. Additionally, school nurses are part of the school's administration and therefore are available to students who are seeking help for behavioral health problems. For students who may be hesitant to speak with parents, teachers, or peers about their symptoms or emotional experiences, the school nurse may be viewed as less stigmatizing for students (Bobo & Shubert, 2013).

Although there have been efforts in schools to increase awareness of and screen for MH disorders, there are also potential barriers to implementing universal screenings in schools. First, it is important to note that less than 10% of American schools offer MH services (Horowitz,

Ballard, et al., 2009). Therefore, when children screen positive for suicide risk or are at risk for a MH disorder, the schools may not have suitable personnel or resources to properly address these concerns on site. Specifically, teachers may generally be unprepared to address or manage MH concerns or illness because of a lack of training and knowledge about proper resources (Bowers et al., 2012).

Second, implementing a universal suicide screening or risk assessment may have a high rate of false positives, such as with the Columbia SuicideScreen (CSS; Shaffer et al., 2004) and ASQ (Horowitz, Bridge, Teach, et al., 2012), which may impose a large burden on limited MH resources (Horowitz, Ballard, et al., 2009). For example, close to 30% of students who complete the CSS will screen positive but only 16% will be true positives (Horowitz, Ballard, et al., 2009; Shaffer et al., 2004). Put another way, the positive predictive value (i.e., the probability that the person who screens positive actually has the condition) is low for the CSS scale (Shaffer et al., 2004). As a result, schools implementing universal screening measures or programs also need to prepare for the potential increased need for referrals and resources.

Thus, it is complex and critical to balance the costs of managing false positives from such screening tools with the benefits of capturing youth truly at risk (Horowitz, Ballard, et al., 2009; Weitzman & Leventhal, 2006). Schools must have a solid, effective plan to provide adequate training to their staff so that they can manage positive screens, which would also include timely input and contributions from MH professionals. Stigma may be another factor that prevents youth from accessing MH services in the school system (Bowers et al., 2012). Lastly, Horowitz, Ballard, et al. (2009) also found that there was no strong outcome data on the impact of suicide screening in schools.

Primary Care. Although the school system may play a critical role in the detection, referrals, and service provision for older children and adolescents, primary care settings represent another setting to identify MH disorders among youth (Biel et al., 2017; Farmer et al., 2003). Given the long-term relationships that PCPs have with children, adolescents, and their families, PCPs may be appropriate healthcare professionals who are well-equipped to universally screen for suicide. Additionally, PCPs are often the primary MH care provider for children and adolescents, including those at risk for suicide. One caveat to consider is that access to PCPs differs depending on sociocultural factors such as race, ethnicity, and socioeconomic status; these potential variations and limitations will be discussed further in the next section. However, despite these variations, approximately 75% of children with diagnosed MH disorders are seen in primary care settings (Ginsburg et al., 2009).

Many adolescents between the ages of 12 and 18 may prefer to speak to their PCP about emotional problems because there are less stigma and more accessibility in the primary care setting, which has led approximately 50% of depressed adolescents to seek MH treatment from their PCP (Horowitz, Ballard, et al., 2009). In their study, V. A. Miller et al. (2018) asked parents and adolescents to respond to various open-ended questions about one-on-one communication between the adolescent and PCP. Findings indicated that parents of adolescents between the ages of 14 and 17 believe it is “highly important” for their child to spend “a lot” of one-on-one time with the physician to improve adolescent-physician communication and promote honest and open discussions between the physician and child or adolescent (V. A. Miller et al., 2018, p. 282). Through these questionnaires, parents and adolescents also identified various child, parental, and physician factors that they perceive to influence the communication between the child and physician during these visits. These factors include familiarity, privacy concerns,

emotional comfort, physician preparedness for the visit, time alone with the pediatrician, trust, support, and rapport with the pediatrician (V. A. Miller et al., 2018).

Additional research indicates when PCPs embed conversations about energy levels, hobbies, mood, appetite, self-injury, self-perception, sleep, and peer relationships during normal wellness exams with adolescents ages 11 and above, it allows PCPs to build rapport and set a tone that these inquiries are a routine part of adolescent wellness exams (Costello et al., 2019; Weitzman & Leventhal, 2006). These techniques and approaches to MH conversations have prompted adolescents' willingness to engage in these conversations. Therefore, adolescents appear to be more open and willing to engage in conversation with their PCPs when the PCPs incorporate all of these factors into their visits (e.g., preparedness, confidentiality, rapport-building; Ford et al., 1997; V. A. Miller et al., 2018).

Despite the fact that PCPs may be a valid place to universally screen for suicide risk and MH disorders, there are certain barriers that make screening difficult in this setting. For example, PCPs would need to probe further with patients who screen positive on any psychosocial domain (Costello et al., 2019; Wissow et al., 2013). Although some children and adolescents may feel more willing to share openly without their parents present, some parents may be uncomfortable leaving their children alone during these discussions. Additionally, asking the parent to leave the room to probe further about the child's socioemotional functioning may create a chasm between the adolescent and parent. If parents are present for these discussions, it may promote open dialogue between parents, adolescents, and PCPs regarding emotional, behavioral, and cognitive difficulties, which may promote open communication in the home as well. PCPs will also need to have intervention plans to follow-up with true positive cases and may lack adequate resources or training to implement treatment plans for MH issues. Pediatric PCPs have also reported a lack

of certainty around interpreting depression screenings, assessing risk and safety, providing psychoeducation to patients about MH issues, and monitoring responsiveness to treatment interventions (Costello et al., 2019).

As noted above, there are also sociocultural factors that may prevent some children and adolescents from having access to PCPs and MH screenings in this setting. For example, being uninsured, not being a U.S. citizen, and fewer years of parent education are all factors that are negatively associated with attendance at well-child visits to PCPs (Selden, 2006; Yu et al., 2002). The lack of insurance and irregularity of child well-visits have disproportionate impacts on children of color (Cassedy et al., 2008). Specifically, families of color are more likely to be uninsured compared to non-Hispanic White families, and children who have had gaps in their healthcare coverage or did not have coverage for extended periods of time are more likely to lack child-well visits and treatment resources due to unreliable healthcare sources (e.g., prescriptions; Cassedy et al., 2008). Therefore, it appears that age, race, nationality, and socioeconomic status may all impact the quality of care and relationships that PCPs provide to children and their families (Cassedy et al., 2008; Kataoka et al., 2002). These access barriers, which impact both the quantity and quality of well-child visits, can influence the early detection of and intervention for MH problems (Kataoka et al., 2002). Lastly, although universal screening in the primary care setting makes logical sense, there are no outcome studies demonstrating the effectiveness of screening in this venue. The impact of screening in primary care settings needs further assessment (Horowitz, Ballard, et al., 2009).

EDs. Given that some youth may not have access to PCPs due to sociocultural factors (e.g., access to insurance; race; ethnicity), EDs may be the only contact that children and adolescents have with health care providers who have the ability to intervene and provide outside

resources (Chun et al., 2013; Horowitz, Ballard, et al., 2009). Additionally, currently, schools do not contain appropriate or adequate resources to assess and treat mental illness in the school setting. Therefore, the ED may be a setting that reaches specific populations that may otherwise not receive MH care. For example, male and homeless adolescents may be more likely to seek care in EDs and less likely to participate in primary or MH care (Chun et al., 2013).

In the ED, acute medical issues take precedence over MH issues. Once acute and urgent medical issues are treated and managed appropriately, the ED may provide a unique window of opportunity to screen for MH risk. Specifically, medical professionals in the ED can address concerns such as suicide, suicidal behaviors, and MH symptoms that may not be addressed elsewhere (e.g., schools, athletics). If pediatric patients screen positive or indicate they are at risk for MH issues, these professionals may have the opportunity to triage youths based on need and facilitate appropriate and effective follow-up care (Babeva et al., 2016; Brodsky et al., 2018). Follow-up care may involve further assessment by a psychiatrist, inpatient hospitalization, partial hospitalization, or referrals for outpatient psychiatry or psychotherapy.

In 1968, the World Health Organization published guiding principles for what types of medical conditions should be screened and how healthcare professionals should implement screening in EDs. Screening should identify both children and adults with undetected medical conditions, which would then decrease mortality rates and the disease burdens on both the individual and society levels (Chun et al., 2013). Since delayed identification and treatment of MH disorder places such a heavy burden on medicine, psychology, and the economy, the public health necessity of screening for MH problems is readily apparent. However, evidence to guide the management and treatment of MH symptoms, including depression and suicidal ideation, in the ED is limited (Hoffman et al., 2019).

Currently, there are no published best practice guidelines for the evaluation and management of MH issues among pediatric emergency patients (Chang et al., 2019). The 2019 National Pediatric Readiness Assessment (NPRP) collaborative was founded to ensure that all US EDs have the guidelines and resources to provide effective emergency care to youth (Dalabih et al., 2022). However, only 47.2% of EDs had a policy that addressed children's MH, and rural areas had an even lower percentage (33%; Dalabih et al., 2022).

Additionally, there are large discrepancies in the quality of care provided to patients across EDs because of the lack of standardized guidelines available to the ED physicians. These discrepancies in the standard of care may exist because EDs have different levels of access to psychiatrists, psychologists, and other MH resources. For example, among EDs providing pediatric emergency care, only 24% of them reported having MH resources in-house (Horowitz, Kassam-Adams, et al., 2001). Furthermore, there is no risk assessment tool that has been validated as an evidence-based psychosocial screening tool for pediatric patients in the ED, which has an impact on ED physicians' implementation of screening measures with their patients (Habis et al., 2007).

This study is focused on screening for MH disorders and suicide risk in the ED. Pediatric ED visits for MH concerns continue to increase quicker than visits for other medical conditions (Horowitz, Ballard, Teach, et al., 2010). Marchesi et al. (2004) found that approximately 42% of pediatric and adult patients who present to the ED have a psychiatric condition. Specifically, depression and anxiety disorders are most frequently found in the ED. Additionally, nearly 40% of individuals ages 16 and older who completed suicide visit an ED in the year preceding their death (Horowitz, Ballard, et al., 2009). These findings indicate that the ED may be an effective, safe, and feasible place to identify youth at-risk for mental illness and suicide. As front-line

healthcare workers, emergency physicians must have adequate training and resources to assess and diagnose MH issues and engage in disposition planning (Horowitz, Kassam-Adams, et al., 2001).

The rate of MH-related ED visits has increased drastically since March 2020 despite the overall decrease in ED utilization throughout the COVID-19 pandemic (Kostopoulou et al., 2022; Leeb et al., 2020; Leff et al., 2021). More specifically, when widespread shelter-in-place orders were in effect between March 29 and April 25, 2020, ED visits for persons of all ages declined by 42% compared with the same period in 2019. In fact, Pines et al. (2021) found that pediatric ED visits reached "peak declines through the week of April 15 of 74%" compared to a 60% decline in adult visits. This trend (i.e., underutilization of pediatric ED visits for medical injury and illness) has been observed specifically related to pediatric ED visits across multiple countries (i.e., the United States, Canada, the Netherlands) and settings (Kruizinga et al., 2021; Pines et al., 2021).

That said, it is important to note that while ED visits for injury and non-COVID-19–related diagnoses decreased, ED visits for psychosocial factors increased (Hartnett et al., 2020; Leeb et al., 2020). More specifically, starting on March 16, 2020, the proportion of ED visits related to MH "increased sharply beginning in mid-March 2020 (week 12) and continued into October (week 42) with increases of 24% among children aged 5-11 years and 31% among adolescents aged 12-17 years, compared with the same period in 2019" (Leeb et al., 2020). While it is important to consider these findings in the context of the substantial decrease in overall ED visits, these findings shed light on children's MH in the context of the COVID-19 pandemic and highlight the importance of continued monitoring of children's MH throughout the pandemic and increasing access to MH services.

These findings suggest that ED healthcare professionals (HCPs) have had to play a pivotal role in providing an assessment of MH symptoms and coordination of treatment for youth. The ED requires a systematic approach that will allow providers to identify patients with or at risk of having depression, and screening tools may offer utility to identify high-risk patients (Chang et al., 2019). The early identification and appropriate treatment of mental illness can reduce the advancement and difficulties of the illness, which could improve long-term psychological and physical outcomes (Downey et al., 2012).

Due to the fast-paced environment and specific limitations of the ED (discussed in further detail below), EDs are poorly equipped for the treatment of pediatric MH problems. Therefore, the primary role of the ED would be to screen briefly for psychiatric risk factors or symptoms and to provide a disposition plan for follow-up care if indicated by significant findings. However, disposition planning should not just be simply providing a list of referrals for psychiatric or psychological treatment options to the patient, which often leads the patient to feel overwhelmed or reluctant to seek treatment (Rozensky et al., 2018; Stewart et al., 2006). Instead, in order to bridge the gap between the ED assessment and long-term follow-up care, the ED staff, MH professionals, and other individuals on the follow-up treatment team need to engage in team-based, interprofessional, collaborative strategies (Rozensky et al., 2018; Stewart et al., 2006).

Universal MH Screening in the ED

Universal screening involves administering an assessment tool or test to a population (e.g., child and adolescent population) to assess that population regardless of symptom presentation or risk factors to identify individuals as either likely or not likely to have a particular medical condition or disorder (e.g., screening all children who present to the ED with suicidal

ideation for suicide risk; Horowitz, Ballard, et al., 2009; Suicide Prevention Resource Center, 2014). Unlike targeted screening, which is when a tool is specifically applied to individuals portraying particular symptoms, universal screening may allow for detection of MH symptoms and disorders that may go undetected otherwise among various populations (Horowitz, Ballard, et al., 2009). Researchers have examined whether universal MH screening in the ED is warranted and have produced favorable support, as described in further detail below.

Several adult and pediatric ED studies have suggested that there are high rates of MH issues even among patients presenting to the ED for nonpsychiatric concerns (Chun et al., 2013). Six pediatric studies are presented here, followed by an adult study. First, Scott et al. (2006) administered the Beck Depression Inventory-2nd Edition (BDI-II) to 351 pediatric patients presenting to the ED department with both psychiatric and nonpsychiatric concerns. They found that moderate or severe depressive symptoms were present among 12% of patients presenting with medical trauma, 19% presenting with medical complaints, and 72% presenting with psychiatric complaints (Scott et al., 2006).

Grupp-Phelan, Delgado, et al. (2007) conducted a randomized controlled trial to determine the effectiveness of two specific MH referral services. In this study, they screened eighty pediatric patients for MH disorders. Children were included in this study if they were between the ages of 4–18 years and spoke English. The participant pool included 67% males and 33% females. Additionally, 42% of participants were Caucasian children, 52% were African American children, and 6% were children from other various racial and ethnic backgrounds. Grupp-Phelan, Delgado, et al. (2007) found that approximately 70% of pediatric patients screened positive for at least one MH disorder.

In another study, Grupp-Phelan, Wade, et al. (2007) assessed the frequency of MH disorders and associated risk factors in children presenting to the pediatric ED. Among 411 children, they found that 45% met criteria for a MH concern, and 23% of children met the criteria for two MH concerns.

Biros et al. (2008) also conducted a cross-sectional study of adolescent ED patients. They administered the BDI-II to 967 pediatric patients (ages 13-17) in the ED regardless of their presenting concerns and found that 20% of adolescents endorsed moderate to severe depressive symptoms (Biros et al., 2008). They also found that 58% were aware that they were experiencing depressive symptoms, while 50% were recognized by guardians as experiencing depressive symptoms. These findings suggest that mood symptoms may be present among youth and may go unrecognized by adults and guardians.

Additionally, Horowitz, Ballard, Teach, et al. (2010) screened both psychiatric and nonpsychiatric patients for suicide risk in pediatric ED. Among the 156 patients who completed this study (i.e., both psychiatric and nonpsychiatric patients), the majority (66.7%) identified as African American, 14.7% identified as Caucasian, 13.5% identified as Mixed, and. 5.1% identified as Latino. There were 106 patients who presented to the ED for nonpsychiatric complaints and 50 patients that presented to the ED for psychiatric complaints. Among these 106 patients with nonpsychiatric concerns, 25% of the nonpsychiatric patients required further psychiatric assessment to assess their risk for suicide, and 6% of the nonpsychiatric patients reported clinically significant suicidal ideation. Among the 50 patients who presented for psychiatric complaints, 40% screened positive for clinically significant suicidal ideation, and 28% had a previous suicide attempt (Horowitz, Ballard, Teach, et al., 2010).

Burt et al. (2022) also examined universal suicide risk screening and its impact on the mean length of stay or wait times for patients with behavioral health complaints and the system impact on ED patient flow. They utilized retrospective patient tracking data from 2017 and discrete event simulation (DES) to determine whether universal screening scenarios (i.e., with all patients in ED 10 years old or older) and universal hospital-wide screening (i.e., with all patients in the hospital 12 years old or older). They also developed a conceptual model of the patient flow in the ED for patients presenting with behavioral health complaints (Burt et al., 2022). Their findings suggested that implementing universal screening would not impact the length of stay or wait times for psychiatric patients in the ED but would significantly impact psychiatric patient overflow. These authors discussed the importance of situational readiness of EDs to manage the impact and demands that universal screening would have on the ED and the health system (Burt et al., 2022).

Miller et al. (2017) reported findings from the Emergency Department Safety Assessment and Follow-up Evaluation (ED-SAFE) study, the largest suicide intervention trial ever conducted in the United States on adult patients. This study specifically examined the effectiveness of universal screening and intervention for individuals at risk for suicide in the ED setting. The researchers used a quasi-experimental design to examine system-based changes in EDs. There were two components to this study (i.e., Screening Outcome and Intervention Evaluation), and there were three phases of data collection (i.e., treatment as usual, screening alone, and screening plus intervention). The screening plus intervention phase consisted of universal screening and secondary suicide risk screening by the ED physician, discharge resources, and post-ED telephone calls focused on reducing suicide risk. The results of this adult study suggested that providing universal screening measures alone, while successful in identifying the patients who

were at an increased risk for suicide, did not significantly affect later suicidal behavior compared with that experienced by participants in the treatment-as-usual phase. However, in contrast, the participants who received the screening plus intervention had reduced rates of suicide attempts and behaviors and fewer total suicide attempts over the 52-week period. These results concur with prior studies that have demonstrated the usefulness of contact following discharge from EDs (Fleischmann et al., 2008; Ghanbari et al., 2015; Hawton et al., 2003).

Although the procedures of Miller et al.'s (2017) study did improve suicide risk detection rates, the examiners did not find evidence that universal screening by itself improved outcomes for patients following their ED visits. However, patients recruited for inclusion in the longitudinal follow-up of this study were identified as having clinically significant suicide risk and only represented a small subset of actual screen-positive patients among the entire ED population. Therefore, the researchers concluded that the advantages of universal screening could be seen with larger, population-based studies.

Future trials must include larger and more diverse sample sizes to examine and demonstrate the effectiveness of universal screenings in EDs in improving outcomes for patients at risk for suicide and other MH symptoms after ED visits. It is logical that the first step to improving MH outcomes for pediatric patients is to ensure that there is a valid screening measure that could be implemented universally to identify youth at risk for mental illness and suicide in the ED.

Current Risk Assessment Tools Used in the ED for MH Issues

This section reviews risk assessment tools that are currently used in the ED to detect suicide risk and MH disorders among pediatric and adult patients. Horowitz, Ballard, et al. (2009) recommended that effective risk assessment tools should have proven specificity,

sensitivity, and positive and negative predictive value and should be brief and easy to administer. Risk assessment tools must include these critical components to identify those who have the condition of interest (true positives) from people who do not have the condition (true negatives). Currently, there are various screening tools that include these components. The details of these screening tools are outlined in Appendix A. Research indicates specifically the Ask Suicide-Screening Questions (ASQ) and Suicide Ideation Questionnaire (SIQ) are both strong assessment tools for measuring suicidal ideation and behaviors in pediatric EDs with patients who present with suicidal ideation (Chun et al., 2013). Both of these measures are brief and have strong sensitivity, specificity, and negative predictive value (Chun et al., 2013; Horowitz, Bridge, Teach, et al., 2012). However, although both the ASQ and SIQ appear to be promising universal measures in pediatric EDs, one weakness of both these measures is that they don't measure overall psychosocial functioning. Furthermore, these measures may not be adequately utilized with both psychiatric and nonpsychiatric patients (Chun et al., 2013).

Barriers to Implementing Universal Screening in the ED

Despite the availability of screening tools (Appendix A), certain barriers may prevent ED staff from screening and detecting MH disorders (e.g., depression, anxiety) and suicide risk in all pediatric patients (Jabbour et al., 2018). One significant barrier is the patients' lack of access to MH resources outside of the ED. Although EDs appear to be the mediating point of interim care for youth waiting for MH assessment and treatment in the hospital or community MH services, there is often a gap between emergent care and outpatient care for MH concerns (Jabbour et al., 2018). Poor insurance coverage of MH concerns for patients is also of concern for many ED staff members (Fein et al., 2010; Jabbour et al., 2018). Due to this lack of proper resources and timely follow-up care, ED staff members may feel unprepared to intervene or provide recommendations

for outpatient care if a patient were to screen positive for mental illness or suicide (Fein et al., 2010).

The second barrier includes the ED staff's specific attitudes and opinions regarding psychosocial screening measures for MH concerns. These attitudes and opinions may impede their willingness to screen for MH disorders and suicide risk among pediatric patients. First, ED staff members are rarely trained in MH or systemic ways to assess risk factors, particularly for children (Chun et al., 2013). Therefore, they may lack confidence in their psychological assessment and intervention skills, which may make them uncomfortable screening this population (Guanci et al., 2016; Horowitz, Bridge, Pao, et al., 2014). Additionally, ED staff members also have reported that their lack of rapport and long-term relationships with ED patients also impacts their willingness to screen for MH issues. Concerns about confidentiality in the ED and breach of expectations for the ED visit for nonpsychiatric issues may also impact staff members' perspectives on MH screenings in this setting (Chun et al., 2013).

With regards to universal screening, ED staff members may also believe that ED is not an appropriate or effective place to screen for MH issues if a patient is presenting with nonpsychiatric concerns. Some physicians or nurses have reported that screening for medical and psychiatric conditions that are not obviously related to the patient's presenting complaints may impact the patient flow through the ED (Burt et al., 2022; Chun et al., 2013; MacWilliams et al., 2017; Rutman et al., 2008). The ED is a fast-paced environment, and psychiatric screenings can be time-consuming and complex (Rutman et al., 2008). Some of the screening tools that are currently available may not be practical for the ED setting because of the time required for administration, which can range from 20 to 40 minutes (Rutman et al., 2008). Other suicide assessment tools may not be options for most EDs because they are intended to be administered

by trained MH specialists or require cumbersome scoring and interpretation by clinicians (i.e., Suicide Intent Scale). There are typically less than 15 minutes of total evaluation time available before the ED physician must make a clinical decision; therefore, it is imperative that a universal screening tool is rapid and efficient so it does not interrupt patient flow through the ED (Chun et al., 2013; Rutman et al., 2008).

Lastly, the stigma of psychiatric illness may prevent parents and pediatric patients from being willing to participate in universal screenings for MH. Parents may be concerned that the ED staff does not have the ability to handle personal information in a private or culturally sensitive manner (O'Mara et al., 2012). Additionally, stigma and fear may influence parents' willingness to allow MH screenings for their children who present with nonpsychiatric concerns (Fein et al., 2010; Horowitz, Ballard, et al., 2009). However, Horowitz, Ballard, Teach, et al.'s (2010) study found that universal screening was received well by both pediatric patients and parents. Additionally, they found that the length of stay for patients who screened positive for clinically significant suicidal ideation was not significantly different than for the patients who screened negative.

Specific data demonstrates the impact that these opinions, attitudes, and barriers have on implementing MH screenings in the ED. Approximately 86% of ED physicians (EDPs) reported screening for MH problems in 10% or less of their patients (Chun et al., 2013). Additionally, Habis et al.'s (2007) survey of the American Academy of Pediatrics' Section on Emergency Medicine indicated 43% of pediatric EDPs screened for MH problems only if the presenting complaint was psychiatric. Only 9% of these physicians stated that they utilized evidence-based tools and practices for MH screening in patients with psychiatric concerns, and 88% felt that a validated and evidence-based screening tool would improve their ability to detect pediatric MH

problems. Since there are no current evidence-based suicide screening tools for ED patients admitted for nonpsychiatric reasons, there is an obvious need for a rapid, quick screening tool for ED physicians that can help identify youth at risk for MH disorders and suicidal behaviors (Horowitz, Ballard, et al., 2009; Horowitz, Ballard, Teach, et al., 2010).

Rationale and Research Aim

Despite the need for enhanced monitoring and assessment of mental illness, risk factors, and suicide with the pediatric population in the ED, there is still no standardized, valid, evidenced-based brief psychosocial screening measure that is implemented in the ED with the pediatric population (Chun et al., 2013; Horowitz, Kassam-Adams, et al., 2001; Horowitz, Ballard, et al., 2009; Horowitz, Ballard, Teach, et al., 2010). There is an apparent need for a screening tool that not only addresses suicidal ideation but also encompasses a comprehensive psychosocial history to detect specific areas of difficulty for children who may encounter MH issues. The research suggests that early detection may allow for more timely initiation of services, including interventions in the ED, additional inpatient or outpatient services, and home- or school-based interventions (Horowitz, Kassam-Adams, et al., 2001).

After the authors reviewed the screening tools outlined in Appendix A, it appears that the HEADS-ED may be the most appropriate screening tool to implement in the ED (Chun et al., 2013; Horowitz, Ballard, et al., 2009). The HEADS-ED has demonstrated strong reliability, accuracy, and concurrent predictive validity for the need for psychiatric consultation and hospitalization (Cappelli, Gray, et al., 2012; Cappelli, Zemek, et al., 2020). Specifically, the HEADS-ED may have the potential to address the need for more complete charting, improved discharge planning, and standardized assessments for the increasing population of pediatric MH patients who present to EDs (MacWilliams et al., 2017). While some authors have mentioned the

possibility of the HEADS-ED as a universal screening measure in the ED, the HEADS-ED has not been validated as an evidence-based screening tool or standard of care for EDs (Cappelli, Gray, et al., 2012; Cappelli, Zemek, et al., 2020; Chun et al., 2013). This systematic review proposes to examine the current literature on the HEADS-ED to determine if this psychosocial assessment tool could be implemented in the ED with pediatric patients.

The systematic integrative review examined one primary research question: According to the available research, to what extent has the HEADS-ED been administered to pediatric patients in an emergency room setting, and who has administered this assessment measure? This systematic review also sought to answer three secondary research questions: (a) Have researchers and authors discussed/recommended the HEADS-ED as a universal screening measure to detect MH problems among pediatric patients?, (b) Have authors or researchers discussed/recommended the potential use of the HEADS-ED for disposition planning?, and (c) Have authors or researchers discussed/recommended the potential use of the HEADS-ED for policy standards?

Chapter 2: Methodology

Integrative Systematic Review Approach

An integrative systematic review was selected as the methodological design for this study. This methodology was chosen primarily because of the potential to contribute to theory development and to apply directly to practice and policy (Whittemore & Knafl, 2005). Systematic reviews gather and integrate evidence from various sources to inform clinical practice and require specific clinical questions, methods, and comprehensive searches for primary research studies (Whittemore & Knafl, 2005). This type of review also allows for an in-depth examination of the quality of information and gaps that may exist in the current literature (Torraco, 2005).

Through the use of quantitative and qualitative methods, an integrative review is a specific subtype of a systematic review that allows for a holistic review, synthesis, and critique of the current literature on a specific topic (Grant & Booth, 2009; Torraco, 2005). Additionally, the simultaneous inclusion of quantitative and qualitative research and the ability "to define concepts, review evidence, analyze methodological issues" (Whittemore & Knafl, 2005**,** p. 547-8). While a systematic review includes primarily experiential research, an integrative review examines both experimental research (e.g., case studies, observational studies) and nonexperimental research (e.g., theory application, practice implications) and allows the researchers to generalize findings from qualitative research more broadly by examining relevant treatment or practice applications and guidelines (Whittemore & Knafl, 2005). Since this review includes an examination of literature discussing the use of the HEADS-ED in the ED, its potential universality, and implications for disposition planning and policy standards, this appeared to be the most appropriate methodology for this systematic review.

As mentioned previously, this systematic integrative review examined one primary research question: According to the available research, to what extent has the HEADS-ED been

administered to pediatric patients in an emergency room setting, and who has administered this assessment measure? Three secondary research questions were also examined: (a) Have researchers and authors discussed/recommended the HEADS-ED as a universal screening measure to detect MH problems among pediatric patients?, (b) Have authors or researchers discussed/recommended the potential use of the HEADS-ED for disposition planning?, and (c) Have authors or researchers discussed/recommended the potential use of the HEADS-ED for policy standards?

Given the nature of this systematic review's research questions, it appeared most appropriate to incorporate various sources of evidence and information in an integrative review. These sources of evidence included qualitative and quantitative studies. Since Whittemore and Knafl (2005) suggested that the limitations of computerized database searches include inconsistent terminology searches and index problems, this systematic review also utilized other approaches to examine the literature (e.g., hand-searching through electronic databases).

The authors reviewed and utilized the guidelines from the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) 2020 statement (Page et al., 2021) to ensure clear and accurate recording of the methodology, results, and conclusions. As outlined in further detail below in the following section, PRISMA guidelines were followed for each phase of the systematic review process including study identification, selection, appraisal, and deductive content analysis to synthesize results.

Eligibility Criteria

While the literature includes systematic reviews, conference presentations, and commentaries that reference the HEADS-ED as a psychosocial screening measure in the ED with pediatric patients, the primary authors only included peer-reviewed journal articles in order to sustain an empirically-supported approach. Of note, when the authors found systematic reviews, conference presentations, and commentaries that included or summarized the HEADS-ED, they examined them for references to any eligible journal articles; eligible articles were then included in the search and screening process. Studies included in this review were published between 2000 and 2023. Since the development and use of the HEADS-ED began primarily in the early 2000s, it seemed most appropriate to review studies published during or after 2000. Additionally, since the HEADS-ED assessment measure has only been administered in hospitals and medical settings in Canada and the United States thus far, each of the studies included was published in English and in either of these two countries.

The sources selected to be examined in this systematic review were required to include the following variables that addressed the primary research question: the administration of the HEADS-ED assessment measure in the emergency room setting (i.e., psychiatric emergency room or medical emergency room; RQ1) with the pediatric population (i.e., individuals under the age of 21 “at the time of their diagnosis or treatment;” U.S. Food and Drug Administration, 2019, p. 1). Additional research variables that were considered (but not required) included the following: comments or recommendations from researchers regarding the universality of the HEADS-ED (RQ2), discussion/recommendation of the HEADS-ED in relation to disposition planning in EDs (RQ3), and recommendations for the use of HEADS-ED for policy standards EDs (RQ4), and facilitators and barriers to implementing the HEADS-ED in ED settings.

Quantitative and qualitative studies that informed the aforementioned research questions, or otherwise met inclusion criteria, were included in the initial search process. The pediatric patients in these studies included were male or female; the studies did not report patients who identified as non-binary. There was no limitation to racial or ethnic identification, gender identity, or sexual orientation in the search process.

Inclusion Criteria

The inclusion criteria for this systematic review included the following:

- Published within the United States of America or Canada in 2000-2023.
- The HEADS-ED screening tool was included in the article.
- The HEADS-ED was administered to a pediatric patient (i.e., a child or adolescent between the ages of 0 and 21) in the ED setting, or the authors must base their results and discussion on previous data discussing the administration of the HEADS-ED to a pediatric patient in the ED setting.
- Addressed the HEADS-ED as a MH screening tool.

Exclusion Criteria

The exclusion criteria for the following study included the following:

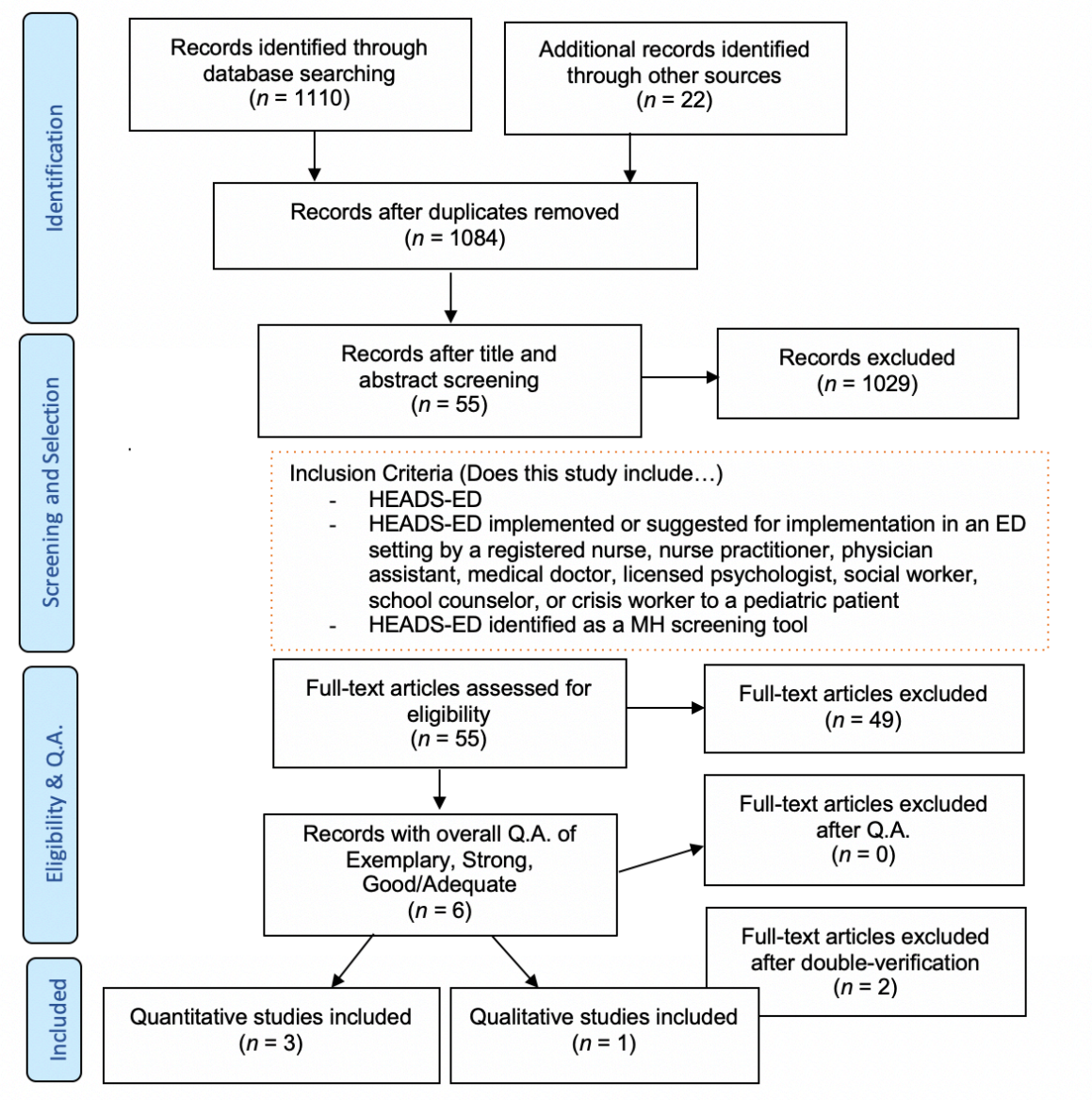
- Published outside the United States or Canada.
- HEADS-ED was administered by a person other than a registered nurse, nurse practitioner, physician assistant, medical doctor, licensed psychologist, licensed marriage and family therapist, crisis worker, social worker, or school counselor.
- HEADS-ED was administered or examined outside of the ED setting (e.g., substance use centers, phone intake systems, primary care settings, etc.).

Workflow for Selection and Screening

The details of the systematic search and screening process are displayed in Figure 1.

Figure 1

PRISMA Workflow Diagram



Note. Adapted from "The PRISMA 2020 statement: An updated guideline for reporting systematic reviews," by M. J. Page, J. E. McKenzie, P. M. Bossuyt, I. Boutron, T. C. Hoffmann, C. D. Mulrow, L. Shamseer, J. M. Tetzlaff, E. A. Akl, S. E. Brennan, R. Chou, J. Glanville, J. M. Grimshaw, A. Hróbjartsson, M. M. Lalu, T. Li, E.W. Loder, E. Mayo-Wilson, S. McDonald, L.A. McGuinness,…D. Moher, 2021, *BMJ (Clinical Research Edition, 372*, p. 71 (https://doi.org/10.1136/bmj.n71). In the public domain.

Search, Screening, and Selection Processes

A detailed record of components of the search, screening, and selection process is outlined in the Central Dissertation Database (see Appendix B). Each phase of this process was recorded in a different tab. The first three tabs outlined three separate phases of the search and selection record. Every source had to pass each phase/tab to move on to the following tab. Phase one included the "Initial Screening of Keyword/title and Abstract." Phase two included the "Full-Text Review (Eligibility)," which involved screening for relevant inclusion and exclusion criteria. Phase three included the "Final Selection (Decision)." The third tab (i.e., the "Final Selection" tab) indicated whether each study in this phase was included or excluded. The fourth tab of this database, titled "Included Sources," involved the title of the source and overall quality appraisal score. The following subsections outline the details of the search, screening, and selection process and the coding and extraction process.

Search

The studies selected for examination in this systematic review were obtained from a variety of psychological, psychiatric, and medical databases. These included Scopus, Psychiatry Online, EBSCO Host, PubMed Central, Pubmed.Gov, and Wiley Online Library. The authors also searched and reviewed the HEADS-ED website to acquire additional sources that contributed to this systematic review.

In order to acquire the proper studies fitting the aforementioned criteria, multiple search terms were created to complete a thorough search of the literature. A precise Boolean search was utilized across the aforementioned electronic databases.

The search terms can be found in the Central Dissertation Database (See Appendix B). They are also are outlined in further detail below:

- (“*HEADS-ED**” OR “*HEADS ED*” OR “*HEADSED*” OR “*HEADS*” OR “*HEADSS*” OR “*HEADSSS*” OR “*HEEADSSS*” OR “*HEADS-ED Develop**” OR “*Development of the HEADS-ED*” OR “*HEADS-ED assessment measure**” OR “*HEADS-ED assessment**” OR “*HEADS-ED risk assessment tool**” OR “*HEADS-ED screening**”)
- AND (“*pediatric patients**” OR “*pediatric**” OR “peds” OR “*pediatric care**” OR “*child**” OR "*KIDS**" OR “*pre-pubescen**” OR “*puberty*” OR “*pre-adolescen**” OR “*adolescen**” OR “*teen**” OR “*youth*”)
- AND (“*Emergency room**” OR “*Emergency department*” OR “*psychiatric department*” OR “*psychiatric emergency room*” OR “*ER*” OR “*ED*” OR “*Emergency Care*” OR “*first responder*”)
- AND (“*Assessment**” OR “*Assessment measure**” OR “*assessment screening measure**” OR “*screening**” OR “*screening measure**” OR “*rapid mental health screening tool**” OR “*screening tool**”)
- AND NOT “*Head trauma**” OR “*head injury*” OR “*Headache**” OR “*Concussion**” OR “*traumatic brain injury**” OR “*intracranial**” OR “*hemorrhage**” OR “*subdural hematoma**” OR “*hemotoma**” OR “*epilepsy**” OR “*seizure**” OR “*Head CT*” OR “*cranial**” OR “*Facial**” OR “*brain imaging**” OR “*neck**” OR “*neck injury**” OR “*skull fracture**” OR “*cervical spine**” OR “*spine*” OR “*Head-to-head*”)

Screening

These studies (n = 1110), in addition to the supplemental records identified through the HEADS-ED website (n = 22), were screened to remove duplicates. The record of this search plan

and databases are outlined in the Search Documentation Record within the Central Dissertation Database (see Appendix C). After the duplicated studies were removed (n = 1084), the authors then completed the "initial screening," which involved screening the title and abstract of each source to determine whether the article was relevant to the topic at hand. An excel spreadsheet in the Central Dissertation Database was utilized to organize and record which studies passed (n = 55) the first initial screening page (see Appendix D).

Selection

For each of the articles that passed this initial screening phase (n = 55), the authors then determined if the article met the inclusion or exclusion criteria in Phase 2. An excel spreadsheet within the Central Dissertation Database was used to systematically evaluate and record whether each article met eligibility criteria (see Appendix E). Lastly, the authors reviewed the data obtained from the eligibility criteria spreadsheet to make a final decision about the articles that met the criteria to move on to the quality appraisal process (n = 6). This was the third and final phase of the screening and selection (see Appendix F).

Quality Appraisal

Quality Appraisal Form

Following the initial screening and the selection of articles, the author and her research assistant then evaluated the quality of each eligible article (n = 6) document using the Quality Appraisal Form (See Appendix G). The goal of this evaluation was to assess the overall quality of each methodology, design, and characteristics of the included studies. This Quality Appraisal Form was created and adapted by the reviewers based on original forms created by the Critical Appraisal Skills Programme (2018) and Whiting et al. (2003). It was used to assess the quality of quantitative and qualitative studies using 10 domains: (a) Strength of Literature Review and

Rationale for Study, (b) Clarity and specificity of Research Aims/Objectives/Questions, (c) Quality of Research Design or Methodological Approach, (d) Sample Selection and Characteristics, (e) Measures / Data Collection Tools, (f) Data Collection, (g) Analysis of Data, (h) Conclusions and Interpretations, (i) Discussion of Study Limitations, and (j) Considerations of Culture and Diversity.

Each of the 10 domains received a rating of *Strong* (3), *Adequate* (2), *Weak* (1), *Missing* (0), or *Not Applicable*. Then, each study was assigned an overall rating based on the average ratings of the 10 questions in the series: *Exemplary* (i.e., mostly 3s), *Strong* (i.e., mostly 2s), *Good/Adequate* (i.e., mostly 1s), and *Weak* (i.e., mostly 0s). In this case, "mostly" was operationally defined as 50% or more. For example, if a source received a score of "2" on six out of the nine items on the Quality Appraisal Form, the study received an overall rating of "*Strong*." This was the study's ultimate quality appraisal. All studies meeting the "*Exemplary*," "*Strong*," and "*Good/Adequate*" requirements were included in the systematic review ($n = 6$). Sources receiving an overall appraisal of "*Weak*" were excluded ($n = 0$).

As mentioned previously, the quality appraisal forms were completed by two independent reviewers to limit the impact of biases. The two independent reviewers then compared and discussed their quality appraisal scores for each of the sources. Following this post-appraisal discussion, two studies were discussed directly with Dr. Susan Hall for double-verification purposes. Since the two aforementioned studies were in-progress studies that did not have primary results and discussion sections yet, they were excluded from this current review. As such, a total of four studies were included following the quality appraisal process.

Data Collection and Extraction

Data Collection

There were four articles included in the present study, including three quantitative and one qualitative study. The data from these four sources was examined to directly address the four research questions posed by this review. The primary research question was the following: According to the available research, to what extent has the HEADS-ED been administered to pediatric patients in an emergency room setting, and who has administered this assessment measure? The three secondary research questions addressed in this systematic review included the following: (a) Have researchers and authors discussed/recommended the HEADS-ED as a universal screening measure to detect MH problems among pediatric patients?, (b) Have authors or researchers discussed/recommended the potential use of the HEADS-ED for disposition planning?, and (c) Have authors or researchers discussed/recommended the potential use of the HEADS-ED for policy standards?

Data Extraction and Coding

The four studies that passed the full quality appraisal process then went through an individualized process that involved coding and extracting all relevant data from each source. The data coding and extraction process of this systematic review occurred simultaneously and was completed by two independent reviewers in order to decrease biased interpretation and thorough interpretation. According to Whittemore and Knafl (2005), the goal of this phase is to present extracted data in a unified manner, interpret the data in an unbiased and thorough way, and draw innovative and integrative conclusions. The rest of this section outlines the various stages and decisions that were involved in the data extraction and coding process, including the creation of the coding manual and coding sheet template, training of researchers, conduction of

the pilot study, the process of resolving disagreements, calculation of percent agreement between raters, and analysis and synthesis.

Data Reduction. First, the primary author and her advisor ("the authors") discussed and predetermined relevant research variables to be extracted from the results and discussion sections of each study. These variables were derived from the primary and secondary research questions and included the following: "to what extent has the HEADS-ED been administered," "pediatric patients," "ED setting," "Administrator of the HEADS-ED," "universal screening measure," "to detect MH problems among pediatric patients," "disposition planning," and "policy standards."

Based on the full-text reviews that occurred throughout the search and screening process, as well as the advisor's experience with prior dissertations, the authors determined and agreed it would be most comprehensive and appropriate to code and extract data from the results and discussion section of each of the sources. While they considered coding the introduction and methods sections of the sources, the introduction sections primarily included literature reviews and rationale for their studies, and the methodology sections outlined their approach to their study. In addition, the results and discussion sections provided thorough summaries of the information most pertinent and relevant to this systematic review and the primary and secondary research variables. As such, the authors deemed it would be most appropriate to code these sections rather than include duplicate or less relevant information from the introductory sections. The authors also determined that it would be most comprehensive to code each paragraph of the results and discussion sections. Thus, paragraphs were the unit of analysis.

The authors then created a Coding Manual to outline the research methods to provide clarity and direction for each of the reviewers and to ensure standardization throughout the coding and extraction process (see Appendix H). The Coding Manual outlined the name of the

research variables and their correlating research question (e.g., “disposition planning”), the specific definition of the research variables (e.g., “Authors mention potential utility/effectiveness of HEADS-ED to guide or facilitate concrete action steps for patient destination following discharge from ED”), potential examples of research variables that could be found in the sources (e.g., HEADS-ED has the ability to match patients to appropriate services that “meet their identified needs at the point of entry into an MH service”), and specific guidelines for how to code the variables (“Copy or paraphrase quote that includes discussion about disposition planning in column #9”).

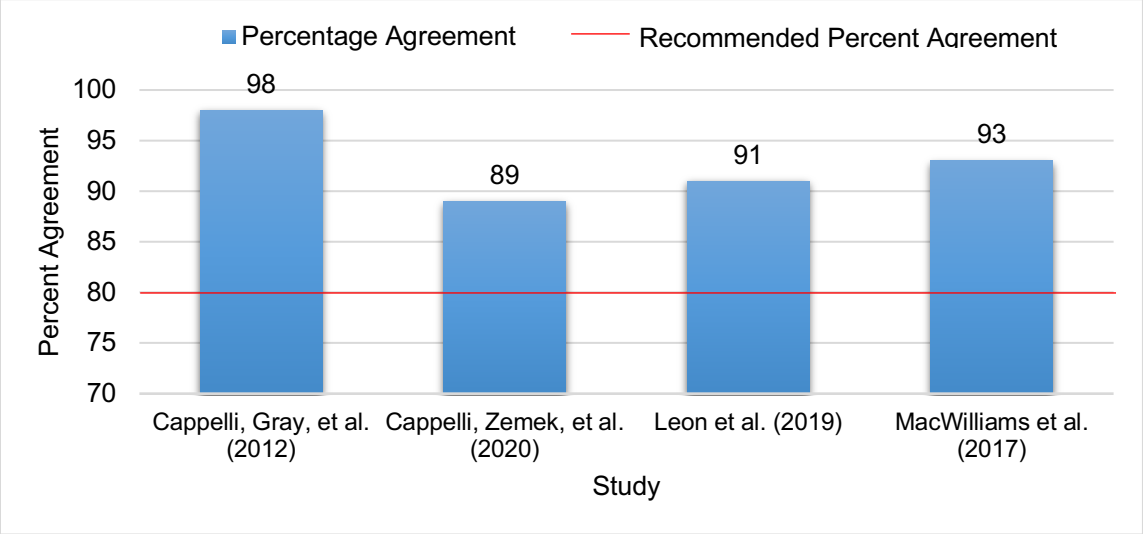
Data Display. A Master Data Collection and Extraction Form was then created to allow for a uniform, succinct, and organized way to extract the predetermined data from each study (see Appendix I). The coding sheet was created prior to the study analysis. The Data Collection and Extraction Form included a table that allowed for a clear and organized way for data extraction. Each paragraph of the results and discussion sections was separated by rows, and the primary and secondary research variables were separated by columns. As such, the authors could copy and paste the quote they coded into the appropriate column for each paragraph. This coding sheet also included an “Inductive” column that allowed authors to code sentences or quotes they believed were relevant to the study but were not addressed by the predetermined research variables. Lastly, the coding sheet included an audit column to allow the authors to write their questions, ideas, or thought processes throughout the coding process, which could be referenced during the post-coding discussions. A coding sheet was completed separately for each primary source included in this review. Thus, each primary source was compiled on a single page with similar data extracted from each subgroup classification.

After creating these documents, the primary author then met with her research team to review the Coding Manual and Coding Sheet Template and provide training on the coding and extraction process. Then, the coding and extraction process was piloted on a relevant sample study during the planning stage. Following this pilot study, the reviewers met again and made modifications to the Coding Sheet Template and Coding Manual to improve the documentation process and the agreement between team members.

Following the pilot study and post-pilot study discussion, the two independent reviewers then began the coding and extraction process for the four articles that were included in this review for analysis and synthesis. The reviewers completed the coding and extraction process for two studies at a time. This process allowed for time for discussion and revisions to the Coding Manual and Coding Sheet Template after the first two studies had been independently coded. Additionally, interrater reliability (i.e., percent agreement) was calculated for each study using an Excel spreadsheet (see Appendix J). On average, the pre-discussion interrater reliability was 93%. Research recommends 80% agreement as the minimum acceptable interrater agreement (McHugh, 2012). The percent agreement for each study is displayed in Figure 2.

Figure 2

Percent Agreement Between Raters



Note. Percent agreement between coding of the four included studies.

When the research team met to review and discuss their coding sheets, any disagreements in the coding were discussed and resolved. Discussions involved coder rationales for their coding decisions and references to their audit notes. While discrepancies were not common (i.e., average percent agreement = 93%), the primary discrepancies between the reviewers' coding sheets were seen primarily among the following variables: *To what extent, detection of MH symptoms, and disposition planning.* One instance of this type of discussion was when the reviewers disagreed about whether the phrase "identification of symptom severity" should be coded under the *detection of MH symptoms* variable or in the *inductive* column of the Coding Sheet. Based on her audit notes, the primary author's reason for inclusion was because she believed detecting "symptom severity" fell under the umbrella of detecting MH symptoms in general. The other independent reviewer's rationale to include this as more of an inductive finding reflected our more conservative approach, as she stated that the text was not directly stating "identification or detection of MH symptoms" but rather addressed the severity of those symptoms. When these

types of disagreements were not resolved fully during post-coding discussions, they were brought to the advisor, Dr. Susan Hall. The primary author and Dr. Hall then engaged in further discussion to come to an ultimate resolution.

The primary author discussed the aforementioned disagreement with Dr. Hall to obtain a third objective opinion. After this discussion, they decided to include the "severity of symptoms" as a potential definition or example of *detection of MH symptoms* since several diagnostic or psychosocial assessment measures (e.g., Beck Depression Inventory, Second Edition, and Child Depression Inventory, Second Edition) utilize the reported severity of feelings (e.g., irritability, depressed mood) and behaviors (e.g., social withdrawal, crying) to determine the presence and level of depressive symptoms.

Reporting of Results

Data Comparison. The Coding Sheets outlined previously allowed the authors to organize the data from each source that addressed each of the primary and secondary research variables. The authors then created and used a Coding Synthesis Sheet to make these comparisons both within and across studies (see Appendix K). The authors documented on the Coding Synthesis Sheet how many times each research variable was coded within the study, the author's summary/interpretation of the data, and an illustrative quote that portrayed a main theme or pattern for each variable. The coding sheets were completed separately for each study.

Conclusion Drawing. Then, the same Coding Synthesis Sheet was completed to examine patterns and themes and draw conclusions from the data across studies. Also, frequencies were calculated for the number of times each research variable was coded across all four studies as a method of summarizing the data. The conclusion-drawing phase involves the transition from recognizing and describing the main patterns and relationships to more advanced interpretation

(Whittemore & Knafl, 2005). The goal of this stage was to provide a succinct, organized, empirically-based summary and conceptualization of patterns and themes that address the primary and secondary research questions in this systematic review (Miles & Huberman, 1994).

Verification. In this final stage, the authors verified the data with the primary source to assure accuracy and confirmation. This step was done to prevent any exclusion of pertinent evidence and will address any conflicting evidence.

As mentioned previously, both independent reviewers kept detailed audit notes throughout the entire coding and extraction process, which included notes pertaining to conflicting data, alternative hypotheses, personal hunches, and ideas related to relevant data. These notes were referred to during both the post-coding discussions as well as this verification stage. The audit notes column was particularly helpful when reviewers were uncertain of whether a quote appropriately fit under a specific primary or secondary research variable or whether the quote fit more appropriately in the inductive column. When there was this level of uncertainty, the reviewers typically took a more conservative approach and placed quotes in the inductive column. Then, they included their detailed thought process of why they were uncertain, the reasons for why they believed the phrase or quote should or should not fit under a specific variable, and why they ultimately placed it in the inductive column. Then, during the post-coding discussions, the reviewers were able to discuss these areas of uncertainty together, compare audit notes, and determine whether or not to keep those phrases/quotes in the inductive column or whether they were indeed suitable for coding under one of the research variables.

Chapter 3: Results

To address this study's research questions pertaining to the use of the HEADS-ED in ED settings in the United States and Canada, the authors conducted an integrative systematic review. This chapter presents the results of the analysis conducted with a total of four studies that met study inclusion, exclusion, and quality appraisal standards from an initial search pool of 1132 articles obtained from six databases. This chapter beings with a presentation of the four included studies. The authors then report key findings that pertain to each of the research variables from the primary and secondary research questions posed in this review.

Included Studies

Table 1 demonstrates the relevant characteristics of the four articles included in this integrative systematic review. This table includes the dates, types of methodological designs, features of the HEADS-ED addressed, and additional MH screening tools included in each study.

Table 1

Included Studies

Study	Pragmatic trial	Features Addressed	Screening Tools
Cappelli, Gray, et al. (2012)	Pragmatic trial	Interrater reliability Concurrent validity Predictive validity Predictive accuracy	CANS-MH CDI HEADS-ED
Cappelli, Zemek, et al. (2020)	Retrospective cohort study	Utility validity Decision validity Interrater reliability	HEADS-ED
Leon et al. (2019)	Qualitative theory-based design	Symptom severity Family characteristics related to repeat MH visits for pediatric patients	CSQ-8 SCAPI Family Assessment Measures HEADS-ED
MacWilliams et al. (2017)	Pragmatic trial	Barriers and facilitators to implementing the HEADS-ED in ED	HEADS-ED

Note. CANS-MH = Child and Adolescent Needs and Strength; CDI = Child Depression Inventory; CSQ-8 = Client Satisfaction Questionnaire; SCAPI = Services for Children and Adolescents-Parent Interview. ED = emergency department.

Meeting inclusion criteria, the four studies included in this review were published between 2000 and 2023. As an integrative review, the included studies used both quantitative and qualitative methodological designs. Specifically, Cappelli, Gray, et al. (2012) and Cappelli, Zemek, et al. (2020) conducted pragmatic trials, which are controlled clinical trials that allow researchers to measure effectiveness in real clinical practice (Godwin et al., 2003). These trials are beneficial because they allow researchers to measure the effectiveness of an intervention or assessment measure (e.g., the HEADS-ED) with patients who represent the full spectrum of the population that may receive or participate in the intervention (Godwin et al., 2003)

Leon et al. (2019) utilized a retrospective cohort study methodology, which involves the examination of archived or past data (e.g., medical records) to classify participant groups based on whether they were exposed or not exposed to the factor of interest (e.g., assessment measure; Setia, 2016). Since the exposure and outcomes have occurred already, researchers can utilize the data to compare groups and draw conclusions regarding the association between exposure and outcomes. Three benefits of retrospective cohort studies are that they are less expensive, take less time, and can be conducted on smaller scales compared to prospective studies (Setia, 2016).

MacWilliams et al. (2017) utilized a qualitative theory-based design to identify the barriers and facilitators to implementing the HEADS-ED assessment measure in the ED setting. They specifically conducted a focus group with 27 participants who work in the ED setting to gather their thoughts about the barriers and facilitators of implementing the HEADS-ED in the ED setting with pediatric patients. Through the conduction of the focus group, MacWilliams et al. (2017) were able to gather the participants' thoughts or feelings this specific and note the differences in perspectives or opinions that may have existed among the various participants (Rabiee, 2004).

As outlined in the third column of Table 1 (i.e., "HEADS-ED Features Addressed"), each of the four included studies evaluated or addressed unique properties of the HEADS-ED. Two studies (i.e., Cappelli, Gray, et al., 2012 and Cappelli, Zemek, et al., 2020) examined the psychometric properties of the HEADS-ED, including validity, reliability, and accuracy with samples of 313 (Cappelli, Gray, et al., 2012) and 639 pediatric patients (Cappelli, Zemek, et al., 2020). Leon et al. (2019) administered the HEADS-ED to 146 pediatric patients to determine symptom severity and to examine family factors that influence repeat MH ED visits among the pediatric population. MacWilliams et al. (2017) discussed the barriers and facilitators to

implementing the HEADS-ED in the ED setting based on the reports from 27 different ED practitioners including ED physicians (EDPs) and crisis intervention workers (CIWs). Specific demographic information of the participant pools for each study are discussed further in the Key Findings for Primary Research Question section.

Furthermore, two of the included studies (i.e., Cappelli, Gray, et al., 2012 and Leon et al., 2019) administered other MH screening tools to their participants in addition to the HEADS-ED, as outlined in column four of Table 1. Specifically, Cappelli, Gray, et al. (2012) administered the Child and Adolescent Needs and Strengths-Mental Health Tool and the Children's Depression Inventory to evaluate the concurrent and predictive validity of the HEADS-ED. Leon et al. (2019) also administered the Client Satisfaction Questionnaire Services for Children and Adolescents - Parent Interview and Family Assessment Measures concurrently with the HEADS-ED, which allowed them to provide further information regarding factors that influence repeat MH visits. The specific findings related to these factors are outside the purview of this systematic review as well as other aspects of these studies not related to our research questions.

Summary of the Key Findings

As mentioned in Chapter 3, the authors of this review created and implemented Coding Synthesis Sheets to provide a structured, systematic way to present and compare the variables coded for each research question. Thus, as a method of summarizing the data, they used these coding sheets to calculate the number of times each research variable was coded within and across all four studies. The following sections and subsections report the key findings related to the research variables from the four research questions posed in this review.

Primary Research Question

This section presents the results regarding the Primary Research Question: According to the available research, to what extent has the HEADS-ED been administered to pediatric patients in an emergency room setting, and who has administered this assessment measure? The variables coded for this research question included the following: (a) the extent to which the HEADS-ED was administered in the ED setting, or the total number of participants included in the study; (b) the type of and reported demographic information (i.e., age and gender) of the population involved in the study (i.e., pediatric population, ED staff); (c) the specific setting in which the HEADS-ED was administered; and (d) the position or role of the professional who administered the HEADS-ED in the ED setting. Table 2 presents the key findings for each of the research variables, and the following subsections provide a narrative description of the findings.

Table 2

Key Findings for Primary Research Question

Study	Extent	Pediatric Population			Setting	Administrator
		Type	Mean Age	Gender		
Cappelli, Gray, et al. (2012)	*n* = 313	C&A	14.3 (2.63)	Unsp.	CHEO ED	CIWs
Cappelli, Zemek, et. al. (2020)	*n* = 639	C&A	15.16 (1.40)	F, *n* = 460 (72.6% of sample)	CHEO ED	EDPs CIWs
Leon et al. (2019)	*n* = 146 (55% of sample)	C&A	13.41 (2.72)	F, *n* = 165	CHEO ED	Unspecified
MacWilliams et. al. (2017)	*n* = 27	CIWs EDPs	Unsp.	F, *n* = 20 M, *n* = 7	3 EDs in Ontario 3 EDs in Nova Scotia	EDPs Crisis workers

Note. Standard deviations are presented in parenthesis. (*n)* = total number of study participants who received the HEADS-ED. C&A = children and adolescents; Unsp. = Unspecified. CHEO = Children's Hospital of Eastern Ontario; CIW = crisis intervention worker; EDP = emergency department physician; ED = emergency department; F = female; M = male.

Extent and Participants. The four studies included in this review involved 1125 participants in total (Cappelli, Gray, et al., 2012; Cappelli, Zemek, et al., 2020; Leon et al., 2019; MacWilliams et al., 2017). This subsection addresses and describes the demographic information of included studies' participant pools and the reason for which the HEADS-ED was administered, starting with the quantitative studies.

Across the three quantitative studies, the HEADS-ED was administered to a total of 1098 pediatric patients (of the 1125 total patients) who presented to EDs with MH concerns (Cappelli, Gray, et al., 2012; Cappelli, Zemek, et al., 2020; Leon et al., 2019). The ages of these patients ranged from 13.41 to 15.16 years. These studies included female or male participants, with the

majority of the samples reported as female (i.e., 58.1% female, 72.6% female, 62% female, respectively; Cappelli, Gray, et al., 2012; Cappelli, Zemek, et al., 2020; Leon et al., 2019, respectively). It did not appear that that studies included a way for participants to self-identify their gender other than as male or female. Across these studies, the HEADS-ED was administered to guide assessments of youth presenting to the ED with MH concerns and/or to determine symptom severity.

The one qualitative study included in this review (MacWilliams et al., 2017) addressed the potential facilitators and barriers to implementing the HEADS-ED in the ED setting. More specifically, they conducted a focus group with 27 participants, including 25 ED practitioners and 2 crisis workers. There were 20 female participants and 7 male participants. No additional demographic information was reported in their study. In this focus group, the ED personnel discussed their beliefs about barriers and facilitators that would impact the implementation of the HEADS-ED in the ED setting with the pediatric population.

Setting. Each of the three quantitative studies in this systematic review was conducted in the Emergency Department of Children's Hospital of Eastern Ontario (CHEO ED; Cappelli, Gray, et al., 2012; Cappelli, Zemek, et al., 2020; Leon et al., 2019). MacWilliams et al.'s (2017) study included ED practitioners and CIWs from several EDs across Ontario (i.e., one tertiary care children's hospital, one community hospital, one rural teaching hospital) and Nova Scotia (i.e., one tertiary care children's hospital, one community hospital, one rural hospital).

Administrators. Three studies identified administrators of the HEADS-ED (Cappelli, Gray, et al., 2012; Cappelli, Zemek, et al., 2020; MacWilliams et al., 2017). In these studies, ED physicians and CIWs were named as the administrators of the HEADS-ED.

Secondary Research Question 1

This section reports the findings relevant to the first secondary research question: Have researchers and authors discussed/recommended the HEADS-ED as a universal screening measure to detect mental health (MH) problems among pediatric patients? To answer this question, the authors of this review gathered data related to the following two research variables: (a) the potential universality of the HEADS-ED and (b) the potential utility of the HEADS-ED in detecting MH symptoms among the pediatric population. Table 3 presents the data extracted for each research variable pertaining to this secondary research question, and it is followed by a narrative description of the key findings for each variable.

Table 3

Key Findings for Secondary Research Question 1

Study	Universal Screening Measure	Detection of MH Symptoms
Cappelli, Gray, et al. (2012)	N/A	Guides assessment of MH symptoms Contains separate items that cover different areas of psychosocial functioning Determines the severity of the MH crisis Concurrent validity with the CANS-MH and CDI
Cappelli, Zemek, et al. (2020)	N/A	Guides psychosocial assessments Strong decision and predictive validity Identifies the severity of mental illness or MH symptoms in youth
Leon et al. (2019)	N/A	Assesses multiple components of psychosocial functioning Gives ED staff a more comprehensive understanding of the severity of patient's symptoms across multiple domains and overall MH functioning
MacWilliams et al. (2017)	N/A	Guides risk assessment Combines risk assessment with disposition planning

Note. N/A = not applicable. MH = mental health. CANS-MH = Child and Adolescent Needs and Strength; CDI = Child Depression Inventory; ED = emergency department.

Universal Screening Measure. Contrary to the authors' expectation, none of the included studies specified or identified the HEADS-ED as a potential universal screening measure. Instead, the included studies in this review discussed the potential implementation of the HEADS-ED with pediatric patients who present with psychiatric symptoms.

Detection of MH Symptoms. Each of the four studies discussed the potential utility of the HEADS-ED to detect MH symptoms among pediatric patients presenting to the ED with MH concerns. Specifically, three studies mentioned the potential effectiveness of the HEADS-ED in guiding the clinical interview and assessment and in assisting the identification of MH symptoms, level of psychosocial functioning, and potential risk factors for mental illness or psychiatric symptoms (Cappelli, Gray, et al., 2012; Cappelli, Zemek, et al., 2020; MacWilliams et al., 2017). Of note, Cappelli, Gray, et al. (2012) found that youth's ratings of depression on the HEADS-ED were significantly correlated with their ratings of depression (i.e., on the Child Depression Inventory) and a more comprehensive clinician rating of MH (i.e., the Child and Adolescent Needs and Strength; CANS-MH). Thus, Cappelli, Gray, et al. (2012) concluded that the HEADS-ED has strong concurrent validity and the potential to identify specific symptoms or risk factors of mental illness among youth.

Lastly, the three quantitative studies highlighted the ability of the HEADS-ED to evaluate MH symptoms across multiple domains of psychosocial functioning (Cappelli, Gray, et al., 2012; Cappelli, Zemek, et al., 2020; Leon et al., 2019). The findings related to the multi-domain nature of the HEADS-ED and the potential effectiveness of the HEADS-ED in identifying symptom severity are described in further detail in the following two subsections.

Multi-Domain Nature of the HEADS-ED in Addressing MH Symptoms. The three quantitative studies reported that the HEADS-ED is unique in that it has the potential to provide

specific and detailed information about MH symptoms by evaluating several domains of psychosocial functioning (Cappelli, Gray, et al., 2012; Cappelli, Zemek, et al., 2020; Leon et al., 2019). Specifically, the HEADS-ED includes seven items (i.e., Home, Education, Activities and Peers, Drugs and Alcohol, Suicidality, Emotions and Behaviors, Discharge Resources). Each of these items includes sample questions has an embedded scoring system with points associated with each item (i.e., 0 = *no action needed*; 1 = *needs action but not immediate / moderate functional impairment*; and 2 = *needs immediate action / severe functional impairment*; Cappelli, Gray, et al., 2012). Figure 3 shows the HEADS-ED screening tool, which includes the item names, scoring options, and qualitative descriptors paired with each item's score options.

Figure 3

The HEADS-ED Screening Tool

The HEADS-ED

	0 No action needed	1 Needs action but not immediate/moderate functional impairment	2 Needs immediate action/severe functional impairment
Home *Example: How does your family get along with each other?*	○ Supportive	○ Conflicts	○ Chaotic / dysfunctional
Education, employment *Example: How is your school attendance? How are your grades? Are you working?*	○ On track	○ Grades dropping /or absenteeism	○ Failing / not attending
Activities & peers *Example: What are your relationships like with your friends?*	○ No change	○ Reduction in activities/increased peer conflicts	○ Increasingly to fully withdrawn / significant peer conflicts
Drugs & alcohol *Example: How often are you using drugs or alcohol?*	○ None or infrequent	○ Occasional	○ Frequent / daily
Suicidality *Example: Do you have any thoughts of wanting to kill yourself?*	○ No thoughts	○ Ideation	○ Plan or gesture
Emotions, behaviours, thought disturbance *Example: How have you been feeling lately?*	○ mildly anxious / sad / acting out	○ Moderately anxious / sad / acting out	○ Significantly distressed / unable to function / out of control / bizarre thoughts/significant change in functioning
Discharge or current resources *Example: Do you have any help or are you waiting to receive help (counselling etc)?*	○ Ongoing / well connected	○ Some / not meeting needs	○ None / on waitlist / non-compliant

The HEADS-ED is a screening tool and is not intended to replace clinical judgment.

Scoring: Items can be evaluated independently in terms of need for action. To obtain a total score, add the value of each item together. Referral for a specialized mental health assessment should be considered if the total sum score is ≥ 8 and the "Suicidality" item is rated as a 2. See www.heads-ed.com for more details.

*Cappelli M, Gray C, Zemek R, et al. The HEADS-ED: A rapid mental health screening tool for pediatric patients in the emergency department. *Pediatrics*. 2012; 130(2):e321–7.

Note. From HEADS-ED Six and Older, by M. Cappelli, C. Gray, R. Zemek, P. Cloutier, A. Kennedy, E. Glennie, G. Doucet, and J. S. Lyons, 2012, HEADS-ED: Mental Health & Addiction Screening Tool for Children and Young People (https://www.heads-ed.com/download/160_2y10YJwMkRGMgy22HXsXbDMTJOC07x). CC BY-NC-ND 3.0.

As discussed in the following subsection below, by providing a total score as well as these scores for each individual item, these researchers suggested the HEADS-ED not only offers a more comprehensive understanding of the child's overall MH functioning but also provides information regarding the severity of specific symptoms or areas of difficulty (Cappelli, Gray, et al., 2012; Cappelli, Zemek, et al., 2020; Leon et al., 2019).

Symptom Severity. Three studies discussed the ability of the HEADS-ED to provide precise and accurate information regarding the severity of MH symptoms and level of crisis (Cappelli, Gray, et al., 2012; Cappelli, Zemek, et al., 2020; Leon et al., 2019). In both studies, Cappelli, Gray, et al. (2012) and Cappelli, Zemek, et al. (2020) examined specific psychometric properties of the HEADS-ED and concluded that the HEADS-ED has strong predictive validity and accuracy (i.e., to identify the acuity of mental illness in children).

First, they reported that the total HEADS-ED scores were statistically and meaningfully different mean scores for the children and youth who required immediate action (e.g., a full psychiatric consultation, admission to an inpatient psychiatric unit) compared to those discharged into the community (Cappelli, Gray, et al., 2012). Then, expanding on these findings in their 2020 study, Cappelli, Zemek, et al. (2020) determined that patients with a total HEADS-ED score of greater than or equal to eight and a suicidality score of two (i.e., the child endorsed "Plan or gesture") were at a 164% increased risk of physicians requesting a consult compared to youth who had a score of less than or equal to eight without suicidality of two. Within the context of these findings, they determined that "a higher overall score on this screening tool translates into an indication of a greater need of immediate action" (Cappelli, Zemek, et al., 2020, p. 10). Therefore, Cappelli, Zemek, et al. (2020) suggested that their results "demonstrate

the decision validity of the tool in identifying the level of acuity of mental illness in children…" (p. 12).

Similarly, Leon et al. (2019) argued that the HEADS-ED has the ability to determine the level of clinical need of pediatric patients presenting with MH concerns to the ED. More specifically, they chose to utilize the HEADS-ED rather than triage level (i.e., how long a patient can wait to be seen in the ED) to determine the level of "clinical acuity" (Leon et al., 2019, p. 17) of pediatric patients presenting to the ED with MH concerns. Since the HEADS-ED includes both a suicidality index as well as individual items that look beyond suicidality, these researchers determined that the HEADS-ED would be more effective in identifying youth who are struggling with severe MH symptoms but may not report active suicidality when compared to triage level.

Secondary Research Question 2

The secondary research question posed whether authors or researchers discussed the potential use of the HEADS-ED for disposition planning. As such, Table 4 presents the findings that addressed the research variable pertaining to this question: disposition planning.

Disposition Planning

Each of the four included studies addressed and discussed the potential utility of the HEADS-ED to assist with disposition planning and follow-up care (Cappelli, Gray, et al., 2012; Cappelli, Zemek, et al., 2020; Leon et al., 2019; MacWilliams et al., 2017). The following two subsections address the main findings related to (a) the efficacy of the HEADS-ED in determining the level of treatment needed for youth and (b) the ability of the HEADS-ED to provide targeted, patient-specific recommendations for children and their families based on item endorsements. Table 4 presents these findings.

Table 4

Key Findings for Secondary Research Question 2

Study	Disposition Planning
Cappelli, Gray, et al. (2012)	Helps determine the level of treatment needed for a child or family (e.g., psychiatric consultation or inpatient admission) Provides targeted guidance or recommendations for follow-up MH services (e.g., family therapy, addiction services, parent training) within the community
Cappelli, Zemek, et al. (2020)	Provides detailed and significant information about the child's MH needs Facilitates more targeted interventions for the child and his/her/their families Strong decision validity (facilitating clinicians' decision-making on consulting with crisis or psychiatry)
Leon et al. (2019)	Evaluates current access to MH resources (e.g., whether or not they are well connected or not connected at all) May link patients to specific resources that are most appropriate based on their MH symptoms or needs
MacWilliams et al. (2017)	May provide clearer information about the next steps for disposition planning

Note. MH = mental health.

Level of Treatment Needed. As discussed previously, the HEADS-ED covers multiple domains of psychosocial functioning, which enables it to provide detailed information about the level of action required according to the child's endorsements on this measure and others' evaluations of their MH needs (Cappelli, Gray, et al., 2012; Cappelli, Zemek, et al., 2020; Leon et al., 2019). More specifically, as mentioned previously, Cappelli, Gray, et al. (2012) and Cappelli, Zemek, et al. (2020) have determined that a higher overall score on the HEADS-ED – particularly a score that is equal to or greater than eight and contains a suicidality score of two – is an indication of a greater need for immediate action (i.e., an immediate psychiatry consultation or inpatient admission; Cappelli, Gray, et al., 2012; Cappelli, Zemek, et al., 2020).

Appropriate and Targeted Recommendations. Three studies also discussed the effectiveness of the HEADS-ED in providing targeted guidance or recommendations for follow-up MH services (e.g., family therapy, addiction services, parent training) within the community (Cappelli, Gray, et al., 2012; Cappelli, Zemek, et al., 2020; Leon et al., 2019). Since this tool allows staff to gather more specific information about multiple domains of the child's MH functioning, it then has the ability to provide recommendations and link patients to specific resources that are most appropriate based on their MH symptoms or needs.

Leon et al. (2019) also suggested that the HEADS-ED is unique in that it assesses whether the child and family are well-connected or not connected at all to MH resources, which also allows for more meaningful disposition planning (Leon et al., 2019). Furthermore, the ED staff in MacWilliams et al. (2017) study discussed the potential ability of the HEADS-ED to provide clear information about the next steps for disposition planning. They specifically stated that the HEADS-ED would be "beneficial to discharge planning because it could provide resources to patients who are otherwise unavailable" (MacWilliams et al., 2017, p. 779).

Secondary Research Question 3

The third secondary research question addresses whether or not there has been discussion or recommendations related to the potential use of the HEADS-ED for policy standards. Table 5 reports the findings from each of the four included studies that addressed the potential utility of the HEADS-ED to help create, impact, or change policy standards.

Table 5

Key Findings for Secondary Research Question 3

Study	Policy Standards
Cappelli, Gray, et al. (2012)	Can be used as a "brief, easily administered standardized screening tool" (p. e326)
Cappelli, Zemek, et al. (2020)	May help create "common, action-oriented language" among providers in the ED when identifying MH symptoms (p. 14) May help standardize the interview and assessment process to ensure providers gather necessary information about symptom severity to determine the level of treatment needed and appropriate discharge resources
Leon et al. (2019)	May be included as part of MH clinical pathways in EDs for pediatric patients May help standardize MH care
MacWilliams et al. (2017)	May create consistent communication (i.e., about the type and severity of patient needs) between healthcare professionals in the ED May facilitate more organized and consistent documentation

Note. ED = emergency department; MH = mental health.

Policy Standards

Three studies discussed the potential of the HEADS-ED to help standardize MH care in the ED (Cappelli, Gray, et al., 2012; Cappelli, Zemek, et al., 2020; Leon et al., 2019). Furthermore, each of the four studies discussed the potential ability of the HEADS-ED to create more consistency with regard to aspects of MH care in this setting (e.g., language, documentation/charting). These findings related to the potential impact of the HEADS-ED on standardization and consistency of care are reported in further detail in the following two subsections.

Consistency. MacWilliams et al. (2017) and Cappelli, Zemek, et al. (2020) both reported that the HEADS-ED may help create common, consistent communication across providers in the

ED. Specifically, the ED staff in MacWilliams et al.'s (2017) focus group discussed the potential ability of the HEADS-ED to "standardize a way to communicate urgency and depth of need to another health professional" (p. 776). Similarly, Cappelli, Zemek, et al. (2020) reported their findings related to the considerable consistency between pediatric EDPs and CIWs' ratings of actionable needs on the HEADS-ED items. They concluded that "identification of patient MH needs and agreement on immediate action facilitates using a common action-oriented language, particularly for identifying suicidal ideation and gesture" (Cappelli, Zemek, et al., 2020, p. 13).

Standardization. Both MacWilliams et al. (2017) and Cappelli, Zemek, et al. (2020) suggested that more consistent language and documentation would help standardize the interview and assessment process in the ED setting. More specifically, Cappelli, Zemek, et al. (2020) report that the HEADS-ED may standardize the interview and assessment process as it helps "ensure key information is obtained for decision-making, uncovers the level of crisis, and determines the level of treatment needed using a common action-oriented language" (Cappelli, Zemek, et al., 2020, p. 14). Leon et al. (2019) also mentioned that implementing an "ED MH clinical pathway" (p. 18), which would involve the HEADS-ED assessment, for pediatric patients may help standardize care for youth presenting with MH concerns in the ED. In conclusion, data gathered from these studies suggested that the HEADS-ED may help ensure that ED providers gather the necessary information about symptom severity to determine the level of action required and to provide the appropriate discharge resources.

Chapter 4: Discussion

To the authors' best knowledge, this is the first systematic review to gather and synthesize the existing literature that discusses the potential utility of the HEADS-ED, a rapid psychosocial screening measure, in the ED setting with the pediatric population. Specifically, this systematic review sought to answer four research questions that addressed the (a) extent to which the HEADS-ED has been administered in the ED setting to pediatric patients, (b) potential utility of the HEADS-ED as a universal screening measure in the ED setting, (c) ability of the HEADS-ED to detect MH symptoms among children and adolescents, and (d) potential utility of the HEADS-ED to inform disposition planning and policy standards. In the following subsections, the authors briefly summarize and discuss their main research findings in the context of the existing literature and then examine the limitations, implications, and contributions of this systematic review.

Primary Research Question

Extent of Administration of HEADS-ED in ED

Of the four studies initially reviewed for inclusion in this systematic review, the majority (n = 3) were quantitative studies that examined and discussed the potential use of the HEADS-ED as a screening measure with pediatric patients in the ED setting. In these studies, EDPs and CIWs administered the HEADS-ED to female and male youth presenting with MH concerns to the ED at Children's Hospital of Eastern Ontario (CHEO) in Canada. Collectively, these studies reported favorable results with regard to the HEADS-ED as an accurate, efficient, and effective screening measure that can guide assessments of youth presenting to the ED with MH concerns and determine symptom severity. Through qualitative analysis, one study also examined and

discussed the barriers and facilitators to implementing the HEADS-ED in the ED from the perspectives of HCPs.

While the findings from each of these four studies are encouraging about the utility of this measure in one ED, the extent to which the HEADS-ED has been administered in EDs across the United States and Canada should be considered marginal at best. Specifically, the findings of this review were drawn from one study site (i.e., CHEO) with small sample sizes and limited information regarding participant demographics. Thus, published work about the frequency of use of the HEADS-ED in the ED is minimal at this time. The full extent of its use, however, may not be captured by the data identified through this systematic review process. Hospitals and MH professionals may be using the HEADS-ED but may not be conducting active research or publishing writings about it. The following paragraphs briefly provide and describe data that may support this hypothesis.

Through the screening, selection and quality appraisal processes, the authors identified two in-progress studies examining the utility of the HEADS-ED in the ED setting with youth; these studies were not completed or published during this study's analysis. First, Jabbour et al. (2018) described their mixed methods study, in which they are incorporating the HEADS-ED as part of an ED Mental Health Clinical Pathway (EDMHCP). Their aim is to determine whether the HEADS-ED can assist with risk assessment and disposition decision-making for pediatric patients presenting to the ED with MH concerns and whether the HEADS-ED can provide a more smooth and efficient transition to follow-up community services. Second, Freedman et al. (2020) shared how they are conducting a prospective, pragmatic 29-month interventional quasi-experimental study. These researchers are administering the HEADS-ED to children who screen positive on the ASQ to determine whether the HEADS-ED measure can be utilized as a follow-

up measure and facilitate more focused MH evaluations. The findings of these studies have not been published to date.

The authors also identified and/or completed full-text reviews of published articles that discussed the HEADS-ED as part of various innovative programs (e.g., Suicide Risk Assessment Toolkit: A Resource for Healthcare Workers and Organizations; care pathways, telephonic intake system) that can be implemented in the ED (Doupnik & Fu, 2019; Jabbour et al., 2018; Roman et al., 2018; U.S. Department of Health and Human Services, Health Resources and Services Administration, Maternal and Child Health Bureau, 2019). While these aforementioned studies did not meet inclusion criteria for the present systematic review for various reasons (e.g., they were commentaries or systematic reviews or discussed the utility of the HEADS-ED outside of the ED), this data suggests the HEADS-ED has been administered to a greater extent (i.e., outside of the ED context) than what was found in this systematic review.

Lastly, when the authors were presenting the preliminary findings of this systematic review at the Society of Pediatric Psychology Annual Conference in April 2021, they engaged in conversations with two psychologists from Children's Hospital Colorado who reported they had utilized the HEADS-ED in combination with the ASQ in their ED with pediatric patients presenting with MH concerns. Again, this anecdotal data may suggest that the extent to which the HEADS-ED is utilized by MH providers may not be fully addressed or represented in the current literature.

The limited implementation of the HEADS-ED thus far may reflect several factors, including the barriers to implementing MH screening measures in the ED, the relatively new nature of the HEADS-ED as a valid MH screening tool, and the potential for EDPs' limited

familiarity with the HEADS-ED compared to other screening measures. These factors are described in the following three paragraphs.

Barriers to Implementing MH Screening in ED

First, research has indicated that there are several barriers that contribute to the limited use of evidence-based measures to assess MH in ED settings, including EDPs' beliefs about their competency to assess for MH symptoms and suicide (Chun et al., 2013; Fein et al., 2010; Guanci et al., 2016; Horowitz, Bridge, Pao, et al., 2014). Specifically, Many EDPs have reported they often feel ill-equipped to assess and manage MH symptoms in the ED due to a lack of skill and training in MH, lack of knowledge of MH resources in the community, lack of rapport and long-term relationships with patients, and concern about the impact of MH screening on ED flow (Chun et al., 2013; MacWilliams et al., 2017). Based on a survey of the American Academy of Pediatrics' Section on Emergency Medicine completed by Habis et al. (2007), 43% of pediatric EDPs screened for MH problems only if the presenting complaint was MH concerns, and only 9% of them reported utilizing evidence-based practices. Habis et al. (2007) also found that 88% of physicians believed that a validated screening tool would improve their ability to detect pediatric MH problems.

Secondly, the HEADS-ED is a relatively new measure, as Cappelli, Gray, et al. (2012) developed and examined the HEADS-ED measure in the ED setting in 2012. Therefore, EDPs may not be as familiar with this measure yet, particularly compared to other screening tools that are older (e.g., ASQ, the Columbia–Suicide Severity Rating Scale [C–SSRS]) and have been discussed or recommended more frequently in the literature, as outlined in further detail below.

In Chapter 1, the authors presented and discussed several evidence-based risk assessment tools that are available and recommended for MH screening with patients in the ED setting

presenting with behavioral health concerns or suicidal ideation (DeVylder et al., 2019; Horowitz, Ballard, et al., 2009). Large healthcare organizations, such as the National Institute of Mental Health (NIMH) and The Joint Commission (TJC), have validated and recommended the utilization of the ASQ specifically for children who present with behavioral health concerns as their primary complaint (https://www.nimh.nih.gov/research/research-conducted-at-nimh/asq-toolkit-materials). In fact, since 2007, TJC has required all accredited hospitals and healthcare organizations to implement validated screening tools and other procedures for patients presenting with suicidal ideation or behavioral health complaints (Dolan et al., 2011). The C-SSRS has also been discussed and recommended frequently within research and clinical settings (Giddens et al., 2014). In 2012, the United States Food and Drug Administration (FDA) stated that the C-SSRS was the "gold standard" for assessing suicidal ideation and behavior in clinical trials (Giddens et al., 2014). Therefore, given the large support that these types of targeted measures have received from large organizations like TJC and the FDA, EDPs and other HCPs may be more aware of targeted screening measures for suicidal ideation compared to newer, more general screening measures like the HEADS-ED.

Given the fact that the above-mentioned barriers may continue to prevent EDPs and HCPs from administering MH screening measures in the ED, such as the HEADS-ED, action steps to address these barriers are warranted. As the world continues to suffer the physical, emotional, and financial sequelae of COVID-19 for the third year and ED visits related to MH continue to rise at devastating rates, detection of MH care and disposition planning in EDs needs to be prioritized.

Secondary Research Question 1

The HEADS-ED as a Universal Measure in the ED

Based on the findings of this systematic review, there was no data to support the potential utility of the HEADS-ED as a universal screening measure in the ED setting. The four included studies in this review involved discussions regarding the HEADS-ED as a screening measure for pediatric patients with MH concerns, but did not discuss the utility of the HEADS-ED in the ED with all patients regardless of whether or not they present with psychiatric or nonpsychiatric concerns.

This finding was contrary to the authors' expectations that literature would discuss or address the potential universality of the HEADS-ED. This expectation was grounded in prior research noting that when researchers have examined universal screening approaches in the ED, their findings have indicated that MH symptoms are present among youth presenting with both psychiatric and nonpsychiatric concerns (Biros et al., 2008; Burt et al., 2022; Grupp-Phelan, Delgado, et al., 2007; Grupp-Phelan, Wade, et al., 2007; Horowitz, Ballard, Teach, et al., 2010; Scott et al., 2006). Furthermore, several research studies have suggested that the ED setting may be the ideal place to screen and identify patients with MH symptoms that would go undetected otherwise (Horowitz, Ballard, et al., 2009). However, as noted, there was no data to support the universal implementation of the HEADS-ED in the four included studies. This may reflect several factors, which are described in further detail in the following paragraphs.

First, the HEADS-ED has been developed and validated as a screening measure for pediatric patients who present to the ED with MH concerns (Cappelli, Gray, et al., 2012). As mentioned previously, current studies are examining the validity of the HEADS-ED as a standardized screening measure for pediatric patients presenting with MH concerns. Specifically,

researchers are implementing the HEADS-ED as a component of MH clinical pathways or "care bundles" (Freedman et al., 2020, p. 1) to identify those at risk for suicide and MH issues (Cappelli, Zemek, et al., 2020; Jabbour et al., 2018). These projects have not yet started to implement these innovative programs with patients who present with nonpsychiatric concerns. As researchers continue to integrate the HEADS-ED into these types of innovative programs and examine its effectiveness in identifying youth who are struggling with MH concerns, it is possible there may be future discussion regarding the potential utility of MH screening measures such as the HEADS-ED with all patients.

Secondly, many studies that have implemented a universal approach to MH screening in the ED have only utilized targeted screening measures for suicidal ideation (e.g., ASQ, C-SSRS; Burt et al., 2022; Horowitz, Ballard, Teach, et al., 2010; V. A. Miller et al., 2018). Since suicide rates have been rising steadily among the pediatric population for several years, research that focuses on how EDPs and HCPs can intervene and attempt to reduce the number of deaths by suicide is clearly warranted. With that said, given that depression, anxiety, and other MH disorders are also rising at devastating rates, there is also a need to gather data about multiple domains of psychosocial functioning to ensure that appropriate and comprehensive care is provided.

Third, while current literature has addressed and discussed the obvious need for enhanced monitoring of pediatric MH in EDs, EDs may not feel or be ready to manage the consequences of universal screening (Burt et al., 2022). Specifically, Burt et al. (2022) found that a sudden or abrupt implementation of universal MH screening in EDs may lead to consequences for patients (i.e., unit overflow) and providers (i.e., managing patients who screen positive in the ED when there is no availability in other units or immediate follow-up is not possible). Therefore, before

universal implementation is integrated into EDs, EDs need to be well-equipped with the appropriate training and resources in order to be ready to manage the implications that may follow (Burt et al., 2022).

In order for EDPs to comply with TJC's mission's mandate to screen youth for suicide who present with behavioral complaints and to eventually implement universal screening in the ED, it will be important for future research to continue to examine the impact of universal screening measures on pediatric MH outcomes, on ED flow, and on physician's beliefs in their abilities to screen for MH symptoms among pediatric patients.

Detection of MH Symptoms

Analyzed data from this systematic review indicated that the HEADS-ED has the potential ability to detect the presence of MH symptoms among the pediatric population and to guide clinicians through the process of determining symptom severity and obtaining key information for clinical decision-making. Specifically, since this brief measure includes items that address various domains of psychosocial functioning (e.g., home environment, substance use, social support, suicidal ideation), researchers have indicated that the HEADS-ED has the ability to determine the child's overall level of psychosocial functioning, identify potential risk factors for psychiatric symptoms or mental illness, and detect specific mood symptoms (e.g., depressive or anxiety symptoms).

One clear strength of the HEADS-ED is that it provides information about the child's level of difficulty (or the absence of difficulty) across various domains of psychosocial functioning. This feature may help identify the children and teens who have gone undetected for years or who may not screen positive on targeted measures that do not include the specific area of mood or psychosocial difficulty (e.g., substance use, bullying, chaotic home environments;

Biros et al., 2008). Each of the seven items on the HEADS-ED addresses a domain of psychosocial functioning, including the support or conflict present in the child's home (i.e., Home), the child's academic functioning and grades (Education), social engagement or isolation (Activities and peers), presence and frequency of substance use (Drugs and alcohol), suicidal ideation and plan (Suicidality), emotional and/or behavioral dysregulation (i.e., Emotions and behaviors), and the child's current access to MH treatment and resources in the community (Discharge Resources).

One domain that is not covered by the HEADS-ED is cognitive functioning (e.g., concentration or memory difficulties). While the child or adolescent may bring up cognitive complaints during conversations about other domains (e.g., Education), the HEADS-ED does not ask about this domain as specifically as other measures (e.g., items addressing concentration on the BDI-II). The HEADS-ED also does not include an item that assesses sociocultural factors or influences that are associated with medical needs and MH (e.g., geographical location, race-based traumatic stress, religious or cultural beliefs about MH treatment). Given the importance of sociocultural intersectionality in MH assessment and treatment, this is another limitation of the HEADS-ED.

Results from the present study also found that the HEADS-ED provides information about the severity of a child's MH symptoms. Since each item of the HEADS-ED (e.g., home, school, friends, suicidal ideation) receives its own individual score (i.e., 0 = *no action needed*; 1 = *needs action but not immediate / moderate functional impairment*; and 2 = *needs immediate action / severe functional impairment*), providers can identify and prioritize areas of difficulty that need to be addressed immediately. Specifically, Cappelli, Zemek, et al. (2020) reported that their results "demonstrate the decision validity of the tool in identifying the level of acuity of

mental illness in children…" (p. 12). Expanding on the potential utility of the HEADS-ED to provide meaningful information to providers, the next section discusses the potential use of the HEADS-ED for disposition planning and determining the next steps of care for children who screen positive for MH issues.

Secondary Research Question 2

The HEADS-ED and Disposition Planning

Results from the four studies included in this systematic review provided clear support that the HEADS-ED has the potential to determine the level of treatment needed for youth, and provide targeted, patient-specific recommendations for children and their families. More specifically, Cappelli, Zemek, et al. (2020) determined that a total score on the HEADS-ED that is greater or equal to 8 and a suicidality score of 2 was significantly correlated with physicians asking for a psychiatric consult compared to children who scored less than 8 or did not have a suicidality score of 2. Based on these findings, Cappelli, Zemek, et al. (2020) determined that higher scores are correlated with a higher level of need for follow-up services. Follow-up consultations and assessments can then do a more thorough and in-depth evaluation of the specific areas of concern. For instance, if a child endorses depressive symptoms on the HEADS-ED, other follow-up professionals (e.g., psychiatric consultants, MH professionals) can then administer additional screening measures that provide further information about the nature and severity of the symptomology (e.g., the BDI-II).

Furthermore, as the authors have discussed, the HEADS-ED assesses the child's current access to MH resources and services (i.e., whether they are connected, well connected, or not connected at all) and provides information about several domains of psychosocial functioning.

Therefore, the administrator or provider can use this data to inform their treatment plan and provide resources that are most appropriate based on the child's MH symptoms and needs.

As mentioned previously, the ED may be the only contact that children and adolescents have with HCPs who have the ability to intervene and provide outside MH resources. Therefore, if pediatric patients screen positive or indicate they are at risk for MH issues on the HEADS-ED measure, there is an opportunity to triage youths based on need and facilitate appropriate and effective follow-up care such as psychiatric consultation, inpatient hospitalization, or outpatient care (Babeva et al., 2016; Brodsky et al., 2018). As described in further detail in the following paragraphs, it is important for HCPs to provide recommendations that are appropriate for the patient and their family and reflect attention to sociocultural factors and barriers that may exist.

Published studies have suggested that psychiatric patients and families often feel overwhelmed when presented with a long list of referrals or recommendations for MH treatment in EDs and other medical settings (Freedman et al., 2020; Rozensky et al., 2018; Stewart et al., 2006). Patients may feel this way because the treatment recommendations and resources provided are "templated" or unspecific to the patient and their needs (e.g., a list of referrals that includes resources to address anxiety when the patient actually experiences difficulty with substance use). The HEADS-ED is that it is unique in that it provides specific, targeted treatment recommendations for the patient and their family based on the item endorsements (Cappelli, Gray, et al., 2012; Cappelli, Zemek, et al., 2020).

Furthermore, MH assessments and disposition plans often do not consider sociocultural attunement and responsiveness (Andermann & CLEAR Collaboration, 2016; Rozensky et al., 2018). When the patient's sociocultural background and social determinants of health (SDOH) are not evaluated, the treatment recommendations may be unrealistic or inappropriate (Rozensky

et al., 2018; Stewart et al., 2006). For instance, a patient from a low socioeconomic neighborhood may receive referrals to outpatient psychiatrists that provide out-of-network care. These types of issues in recommendations contribute to the existing gap that exists between MH assessment and follow-up care and has a disproportionate impact on children from marginalized backgrounds. Research clearly indicates that health inequalities and SDOH (i.e., economic stability, healthcare, neighborhood, built environments) are heavily intertwined in MH outcomes (Andermann & CLEAR Collaboration, 2016; Lax et al., 2022). Therefore, there is a need to consider how these social factors impact psychosocial functioning for youth. Since the HEADS-ED considers social and contextual factors, including home environments, educational status and background, and current access to MH resources, this measure may allow providers to start bridging this gap (Lax et al., 2022).

In summary, findings from the current study revealed that HEADS-ED has the potential to serve as a screening measure that can provide a broad picture of symptomology and determine the next steps of care. Currently, Cappelli, Gray, et al. (2012) and Cappelli, Zemek, et al. (2020) are developing a web-based design for the HEADS-ED so that it can link hospital and community resources electronically. This advance would be helpful for several reasons. First, having quick and easy access to appropriate MH resources may make this measure more appealing for EDPs to use (MacWilliams et al., 2017). Specifically, it would ease the burden and expectation for ED providers and other professionals to hand-search for resources that are specific to the patient's needs. Secondly, since many EDPs and HCPs have expressed concerns about their limited knowledge of and access to community MH resources, this advance would help to streamline the integration of assessment and treatment by providing appropriate options for follow-up (MacWilliams et al., 2017).

Secondary Research Question 3

The HEADS-ED and Policy Standards

Current literature states that while pediatric MH issues frequently present in EDs, there are still no best practice guidelines to guide or implement standardized psychosocial assessments in this setting (Chang et al., 2019). Lack of best practice guidelines also results in a large variation in the quality of MH assessment and care, which, in turn, reduces potential access to MH resources (e.g., psychiatrists, social workers). Although the four studies in this systematic review did not make firm conclusions about the ability of the HEADS-ED to impact policy standards, the findings from the current review may provide preliminary evidence that HEADS-ED has the potential to help with the standardization of MH care. The following subsection provides

Standard of Care. Findings from the present study revealed that the HEADS-ED may have the ability to create more consistent guidelines for assessment, communication, and documentation for MH issues in the ED (Cappelli, Zemek, et al., 2020; MacWilliams et al., 2017). For instance, Cappelli, Zemek, et al. (2020) describe the potential ability of the HEADS-ED to standardize the interview process so that all EDPs are gathering the same information from the interview with each patient presenting with MH concerns. Furthermore, findings suggest that the HEADS-ED may also create more "common, action-oriented language" (Cappelli, Zemek, et al., 2020, p. 14) among EDPs about the type and severity of patient MH needs. Therefore, the HEADS-ED may address the variation in the standard and quality of MH assessment and care by (a) ensuring that ED providers are gathering the same necessary information across patients (i.e., assessing the same seven domains across patients and utilizing

the same scoring system) and (b) providing a more effective and efficient way to document the level of need and crisis for patients than less-structured or informal MH assessments do.

While the legal definition of "standard of care" is widely debated in the medical and psychological community due to nuances in language and concepts, the standard of care is broadly defined as "what a minimally competent physician in the same field would do in the same situation, with the same resources" (Moffett & Moore, 2011, p. 112). Standards of care may be developed by the court of law, specialist societies, or organizations and typically involve formal or informal guidelines and protocols that are grounded in scientific knowledge and evidence (Moffett & Moore, 2011; Oberman, 2017).

As mentioned previously, organizations like TJC have already established informal guidelines for the standard of care (or "best practice") in EDs and have required their accredited hospitals and organizations to implement valid screening tools with children presenting with behavioral health complaints (Dolan et al., 2011). Research has continued to highlight the clear need for enhanced monitoring of pediatric MH symptoms in the ED. Since the HEADS-ED has been validated as a psychosocial screening tool that can detect MH symptoms among youth, the HEADS-ED, the HEADS-ED may be a promising measure to implement in this setting for children presenting with MH symptoms (Cappelli, Gray, et al., 2012; Cappelli, Zemek, et al., 2020; Leeb et al., 2020). Future research that examines the potential validity of the HEADS-ED as a universal screening measure in the ED (i.e., its ability to detect MH symptoms even among youth presenting with nonpsychiatric concerns) is needed to address whether implementation of this measure could be considered "best practice" (Kennedy et al., 2009, p. 1).

Advocacy, Funding, Legislature, and Policy. This systematic review provided a clear, concise synthesis of the current research that (a) discussed the magnitude of pediatric MH

illness, (b) addressed the need to implement evidence-based, standardized pediatric MH assessments in the ED, and (c) highlighted the potential utility of the HEADS-ED as a brief, effective screening measure in this setting that can provide targeted treatment recommendations for youth. Furthermore, this review analyzed and synthesized the various sociocultural and institutional barriers that prevent standardized MH assessment and treatment in the ED setting.

Given the prevalence of pediatric MH conditions that continue to go undetected and untreated, there is a clear need for legislation and public policy that promotes greater awareness and assessment of pediatric MH issues. Some organizations, such as the Committee of Pediatric Medicine, have made recommendations for pediatric HCPs (e.g., pediatricians, family care physicians) to participate in petitioning legislators and policymakers to increase reimbursement and funding for MH services for youth (e.g., funding for Medicaid, community services, inpatient services; Dolan et al., 2011). The authors of this study firmly believe that MH services should also include MH screening to improve the monitoring and detection of MH symptoms and risk for suicide. Our hope is that the findings from this study will reduce the burden on policymakers to find and analyze this research on their own and motivate them to fund additional research studies or trials on the HEADS-ED and other psychosocial screening measures and fund additional MH resources.

Furthermore, if the ED starts to administer more screening measures to detect MH symptoms, this also means that the healthcare system needs to be prepared adequately to provide treatment and intervention for the children and adolescents who screen positive (Burt et al., 2022). These types of resources and services would include school counseling centers, community-center programs, inpatient psychiatry services, and MH providers and institutions that provide Medicaid services (Dolan et al., 2011; Foy & Perrin, 2010). Enhancing the access to

and quality of these types of follow-up services is necessary to ensure that children, adolescents, and their families have equitable opportunities to address and treat the areas of need that the HEADS-ED may identify and help ED providers feel that they can do the screening without worrying about the impact of it on the ED patient flow.

It is also important to note that many efforts to advocate for better care and funding for MH screening and treatment have been made by governmental organizations such as the American Academy of Pediatrics, the Committee on Pediatric Emergency Medicine, the American College of Emergency Physicians, the National Association of EMS Physicians, the Emergency Medical Services for Children (Health Resources and Services Administration, Maternal and Child Health Bureau), and the U.S. Preventative Services Task Force. For instance, the Committee on Pediatric Emergency Medicine published an article in 2011 calling for action on both federal and national levels, encouraging federal support of funding for local and "regional fatality-review teams" (Foy & Perrin, 2010, p. 1362) to promote deeper investigation and understanding of psychosocial factors related to suicide among children and adolescents.

More recently, in May 2022, the Department of Health and Human Services (HHS) announced there was going to be nearly $35 million in funding opportunities to support and advance community-based MH services and suicide prevention efforts for the pediatric population in the United States. These efforts came about as part of the Biden-Harris administration's National Tour to Strengthen Mental Health. Continued efforts like these are needed at all levels to enhance the knowledge and skill of providers in the ED setting, advocate for equitable care, and bridge the gap between assessment and treatment.

Based on the findings posed in this review, legislation and policy changes that may help achieve these goals likely need to include (a) identification of the best curricula for practitioner-

wide education to enhance confidence and competence in MH care, (b) advocacy for adequate government funding for MH resources in ED settings, and (c) enhancement of infrastructure that bridges the gap between MH assessment and treatment (e.g., building community outreach and connections, including social and contextual factors and SDOH in screenings and assessments), particularly for marginalized populations (Andermann & CLEAR Collaboration, 2016; Dolan et al., 2011; Lax et al., 2022).

Limitations and Directions for Future Research

Prior to discussing the implications and contributions of the current study, this systematic review also had several limitations. First, one of the major limitations is that this study's conclusions were drawn from a small sample of only four peer-reviewed articles. This highlights the limited availability of published data on the HEADS-ED in EDs. Due to the specific focus of this systematic review on the ED context, exclusion criteria omitted studies that discussed the implementation of the HEADS-ED in different settings (e.g., substance use centers, phone intakes for intensive-outpatient centers). Furthermore, some identified studies were excluded due to the fact that they were still in the process of implementing their research design and therefore did not yet include results or discussion sections in their articles.

Secondly, the four studies included in this review were all published in the ED at CHEO in Canada. As such, it is difficult to determine the generalizability and external validity of these findings. It will be important for future research to examine the HEADS-ED in multisite centers across various providences, states, and countries.

Thirdly, despite the authors' efforts to follow clear methodological steps and to reduce the risk of bias (e.g., selection bias, overestimation or underestimation of effect), this systematic review was not fully immune from all bias. For instance, the research questions and variables

included in the current study were informed by their review of the literature and framed to address what is currently available. Furthermore, the research variables were included as part of their inclusion criteria. Since it is possible that their literature review was not fully exhaustive, their search may have not produced all the research available on the HEADS-ED. That said, the authors tried to implement as many strategies and procedures as possible to reduce the risk of bias, as outlined below.

First, during the selection process of this review, two independent raters completed quality appraisals for each study that made it to Phase 3 (i.e., Selection) and engaged in post-appraisal discussions to discuss their ratings. Furthermore, each study that was included in this review went through a rigorous coding and data extraction process, which involved double-verification conversations with a third person (Dr. Susan Hall). This data extraction and coding process involved the creation of a detailed coding manual that outlined specific definitions and examples for each variable, a coding sheet template to ensure standardization of coding across raters, training of the research assistant on the coding manual and coding sheet template, conduction of a pilot study to ensure and improve the clarity of the coding manual and to refine definitions of research variables. The raters completed the coding process incrementally (i.e., two studies at a time) to provide time to engage in post-coding and data extraction discussions and calculate percent agreement. The author also consulted Dr. Susan Hall when there was a disagreement on a coding or extraction decision. Lastly, the primary author and research assistant completed audit trails throughout the coding and data extraction phases to document any questions, concerns, or ideas that arose. While each of these efforts was made to ensure unbiased extraction and interpretation, there may still be a possible impact of bias on the findings.

Lastly, one significant and unfortunate limitation of the studies included in this systematic review was the lack of discussion around diversity and sociodemographic variables. More specifically, one study only mentioned the age, gender, and occupation (if relevant due to age) of the participants, while the other three did not include demographic information beyond age and binary gender (i.e., male and female). Sociocultural factors such as race, ethnicity, religion, sexual orientation, and gender identity all have significant impacts on how youth experience MH symptoms, how they communicate their experiences, how they perceive medical personnel and environments, and if and how they approach MH care. As such, the lack of consideration and discussion surrounding these sociocultural factors thoughtfully in the included studies, as well as the ability to interpret and apply these findings across diverse populations is limited. Future studies need to involve larger sample sizes that include populations from various sociocultural backgrounds.

Strengths, Contributions, and Implications for Practice

EDs appear to be "safety nets" for pediatric patients with MH crises (Cappelli, Gray, et al., 2012). One strength of this systematic review is its potential use as a resource to inform HCPs with synthesized evidence about the HEADS-ED as a valid and effective psychosocial screening measure. Since the need for psychiatric care continues to increase in EDs, the need for a standardized MH screening tool in this setting continues to intensify (Cappelli, Gray, et al., 2012). The hope is that this systematic review may serve as one small but significant step towards helping to obtain standardized MH screening in the ED.

Another strength of this study is the highly detailed and thorough data extraction and synthesis process. The authors utilized and implemented several strategies (i.e., a pilot coding study, detailed coding manual, and detailed audit trail) to ensure they recorded in-depth and

thorough accounts of each step of the data analysis, coding, and synthesis process. Furthermore, the primary author calculated pre- and post-rater reliability to ensure consistent and reliable coding between raters. The author and research team also engaged in pre- and post-coding discussions for each of the three phases of the coding process.

One of the most important implications for clinical practice is the need to continue to improve MH literacy among HCPs. Prior studies have suggested that ED providers are often hesitant to perform psychiatric assessments because of concerns surrounding building rapport, understanding valid screening measures, maintaining confidentiality in the ED setting, and providing appropriate referrals (Horowitz, Bridge, Pao, et al., 2014; Guanci et al., 2016). As such, there is an apparent need for more detailed and intensive education so that HCPs, particularly ED staff, can enhance their knowledge and skill in these domains. This need will also require medical and psychology providers to dedicate themselves to learning the current evidence-based guidelines for MH assessment of the pediatric population in the ED setting. While screening measures like the HEADS-ED will provide specific information and scores regarding areas of need and discharge resources, providers will still need to use and trust their clinical judgment and decision-making. As such, building confidence and competency in these areas is essential. Doing so may not only address the need for improved monitoring of pediatric MH but may also help the ED move towards establishing the standard of care or "best practice" that is needed.

Furthermore, there needs to be continued scientific and clinical efforts to increase the collaboration between medicine and psychology as well as other mesosystems (e.g., schools, neighborhoods, community clinics) to establish a more cohesive and efficient connection between MH assessment and treatment.These sectors must be dedicated to clear communication

and integration of services to reduce the burden on children and families and improve flow in and out of the ED. One of the primary aims of this dissertation was to synthesize evidence on the HEADS-ED and its potential to be one small yet significant component of this integrative process. Given that preliminary research has suggested the HEADS-ED is effective in identifying those at risk and initiating connections to MH resources, this measure has promising potential.

Conclusion

The purpose of this study was to provide an integrated systematic review of available literature that examined the potential utility of the HEADS-ED as a psychosocial screening measure with pediatric patients in the ED setting. The authors examined and synthesized data to respond to four specific research questions addressing (a) the extent to which the HEADS-ED has been administered in the ED setting with pediatric patients and who has administered the measure, (b) the potential ability of the HEADS-ED to be implemented as a universal screening measure and detect MH symptoms among pediatric patients, (c) inform disposition planning, and (d) inform policy standards.

While the HEADS-ED has not been administered to the same extent as other well-known risk assessment tools (e.g., ASQ, C-SSRS) due to its relatively recent development (i.e., the HEADS-ED was developed in 2012, ASQ in 2008, and C-SSRS in 2007), current findings suggest that the HEADS-ED been examined and implemented as a valid screening tool in the ED setting with pediatric patients presenting with MH concerns but not with patients who present with nonpsychiatric concerns. Findings also suggest that the HEADS-ED has the ability to detect MH symptoms accurately, to provide specific information about the areas of need and severity of MH symptoms, and to guide consultation, decision-making, and treatment recommendations.

Furthermore, the HEADS-ED may provide a more standardized and structured guide for EDPs and HCPs to gather information regarding each child's psychosocial functioning. Similarly, the HEADS-ED includes an embedded scoring system and clear cutoff score that indicates clinical significance (i.e., a raw score of eight and suicidality of two). Documenting both the individual item scores and total HEADS-ED score may facilitate more consistent communication about and documentation of the types and severity of MH symptoms among providers in the ED setting.

Our hope is that this systematic review is a preliminary step toward providing translational, evidence-based research that expands awareness and motivates practitioners, researchers, stakeholders, and policymakers to enhance pediatric MH assessment in the ED and to take concrete action steps toward change. On a governmental and federal level, we believe it will take continued efforts to acknowledge and address the current pediatric MH crisis and advocate for the federal and state funding that is required to improve access to MH care in schools, communities, and hospitals. Furthermore, HCPs in the fields of medicine and psychology need to continue to advocate and work for strengthened interdisciplinary and community partnerships, meaningful clinical research, and evidence-based approaches to MH. We strongly believe that these combined efforts will continue to help bridge the gap between MH assessment and follow-up treatment and offer the hope and care that is so desperately needed for the children and families who have suffered in silence far too long.

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APPENDIX A

Comprehensive Table of Psychiatric Risk Assessment Tools Used in Emergency Departments with Pediatric Patients

Key	
	Mental Health Condition/Area
	Suicide
	General Psychosocial Health
	Depression
	Anxiety
	Anger/Aggression
	Substance Use

Screening Tool	Length and Questions	Completed/ Administered by:	Target Age	Description
Ask Suicide Questionnaire (ASQ)	4 items about risk factors 3 items about suicidal ideation	ED staff	10-24	Rapid screening tool to detect adolescents at risk for suicide.
Beck Scale for Suicide Ideation (BSSI)	21 items	Self-report	17 and older	Self-report instrument to detect and measure current intensity of the patients' specific attitudes, behaviors, and plans to commit suicide durin g the past week.
Columbia Suicide Severity Rating Scale (C-SSRS)	2-6 items: 2 questions to assess suicidal ideation and 4 designed to detect suicidal behavior.	Administered by ED staff (healthcare providers) or can be a self-report measure	11 and older	Assesses severity of suicidal ideation. Provides a classification of low, moderate or high risk based on responses. Available in 140 languages.

Reasons for Living Adolescents (RFL-A)	32 items	Self-report	14-18	Screens for and measures protective factors that are deterrents to suicidal behavior including Future Optimism, Future Optimism (F.O.), Suicide-Related Concerns (SRC), Family Alliance (F.A.), Peer Acceptance and Support (PAS), and Self-Acceptance (S.A.).
Risk of Suicide Questionnaire (RSQ-4)	4 items	ED Nurse	8-21	Assists in triaging youth who present with psychiatric chief complaints.
Risk of Suicide Questionnaire-Revised	17 items	Self-report	13-18 SIQ: Grades 10-12 SIQ-J: Grades 7-9	Provides information on risk factors for suicide in adolescents by addressing previous suicide history, S.I, depression, hopelessness, substance use, social isolation.
Self-Harm Behavior Questionnaire (SHBQ)	22 items	Self-report	12 and older	Screens for suicidal thoughts and behavior and nonsuicidal self-harm. Includes the following 4 subscales: nonsuicidal self-harm, suicide attempts, suicide threat, and suicide ideation.
Suicide Assessment Five-step Evaluation and Triage (SAFE-T)	4 domains assessing suicidality and 1	ED staff	12 and older	Five-step screener to identify risk and protective factors, inquire about suicidal

	domain addressing documentation			ideation, plan, means, behavior, and intent, determine risk level, and choose an appropriate intervention.
Suicide Behaviors Questionnaire, Revised (SBQ-R)	4 items	Self-report	13 and 18	Screens for suicidal ideation and behavior and differentiates between the two.
Suicidal Ideation Questionnaire (SIQ) and Suicidal Ideation Questionnaire-Junior (SIQ-J)	SIQ – 30 items SIQ-J - 15 items	Self-report	SIQ – Grade 10 and above SIQ-J – Grades 7-9	Provides information about adolescent level of distress and suicidal intent. Higher scores (i.e., >41) warrant further psychiatric evaluation and may indicate suicide risk.
Suicide Ideation Scale (SIS)	10 items	Self-report	College-aged individuals	Screens for suicidal ideation and tendencies.
Suicide Probability Scale	36 items	Self-report	14 and older	Inquires about particular feelings and behaviors and provides information regarding patient's level of suicidal ideation, hopelessness, negative self-evaluation, and hostility. This measure does not mention suicidality in its title.
Beck Youth Inventories Second Edition (BYI-2)	5 inventories: Each inventory includes 20 items each	Self-report	7-18	Five inventories including the following: Depression, Anxiety, Anger, Disruptive Behavior, and Self-Concept. These inventories can be

				utilized in combination with each other or in isolation to target specific symptoms. Assesses symptoms of depression including sadness, anxiety, anger, violence, and low self-esteem or self-concept.
Behavioral Health Screening-Emergency Department system (BHS-ED)	37 required items and 14 follow-up questions, if necessary	Self-report	12-18	Domains include substance misuse, depression, anxiety, suicidality, self-harm, trauma, sexuality, safety, demographics, education, family, nutrition, eating habits, independence, and access to medical care
Brief Rating of Aggression by Children and Adolescents (BRACHA)	14 items	ED staff	3-19	Assesses risk of aggressive behavior by hospitalized children and adolescents
Caregiver Perceptions Survey	31 items	Caregiver	12 and younger	Addresses the patient's main reason for ED visit and other concerns such as psychosocial stressors, the caregiver's perceptions of the child's strengths, and the expectations the caregiver and child have for the ED visit.
Emergency Department Distress Response Screener (ED-DRS)	11 items	Self-report	12 and older	Assesses frequency of alcohol and drug abuse, exposure to trauma, and

				behavioral symptoms among patients who present for medical complaints
Global Appraisal of Individual Needs-Short-Screener	5 sets of items with 5-7 subset questions	Self-report	12 and older	Based on the full GAIN biopsychosocial assessment This tool quickly identifies internalizing disorders, externalizing disorders, substance use, crime, and violence
HEADS-ED (Home, education, activities/peers, drugs/alcohol, suicidality, emotions/behavior, discharge resources.	7 items	ED physician or mental health professional	18 and younger	Addresses past and current psychosocial history. Used to aid in overall psyschosocial assessment and decision making
Pediatric Symptom Checklist Parent Completed Version of Pediatric Symptom Checklist	35 items 35 items	Self-report Parent or caregiver	11-18 11 and younger	Psychosocial screening tool designed to facilitate the recognition of cognitive, emotional, and behavioral problems.
Patient Health Questionnaire Adolescents (PHQ-A)	10 items	Self-report	11-17	Assesses anxiety, eating, mood, and substance use disorders among adolescents.
Youth Perception Survey	General assessment	Self-report	12 and older	Addresses the patient's main reason for ED visit and other concerns such as psychosocial stressors, the child's perceptions of the child's strengths, and the expectations the

				caregiver and child have for the ED visit.
Center for Epidemiologic Studies Depression Scale for Children (CES-DC)	20 items	Self-report	6-17	Measures depressive symptomology. Available in Spanish.
Children's Depression Inventory, Short (CDI-2, Short)	12 items	Self-report	7-17	Assesses cognitive, affective, and behavioral signs of depression.
Hopelessness Scales for Children (HSC)	17 items	Interviewer-administered (by health care provider or ED staff)	6-12	Assesses youth for feelings of hopelessness, loss of motivation, and future expectations.
Reynolds Adolescent Depression Scale 2nd Edition (RADS-2)	30 items	Self-report	11-20	Assesses four dimensions of depression: dysphoric mood, anhedonia/negative affect, negative self-evaluation, and somatic complaints.
Screen for Child Anxiety Related Emotional Disorders (SCARED-P and SCARED-C)	41 items	Administered by clinician or psychiatrist SCARED-P completed by parents SCARED-C completed by children	8-18	Screens for childhood anxiety disorders: general anxiety disorder, separation anxiety disorder, panic disorder, and social phobia. In addition, it assesses symptoms related to school phobia.
Screening Tool for Early Predictors of PTSD	12 items total: 4 dichotomous questions asked of the child, 4	Administered by clinician or ED staff	8-17	Identifies those who are at risk of persistent posttraumatic stress – both children and their parents –

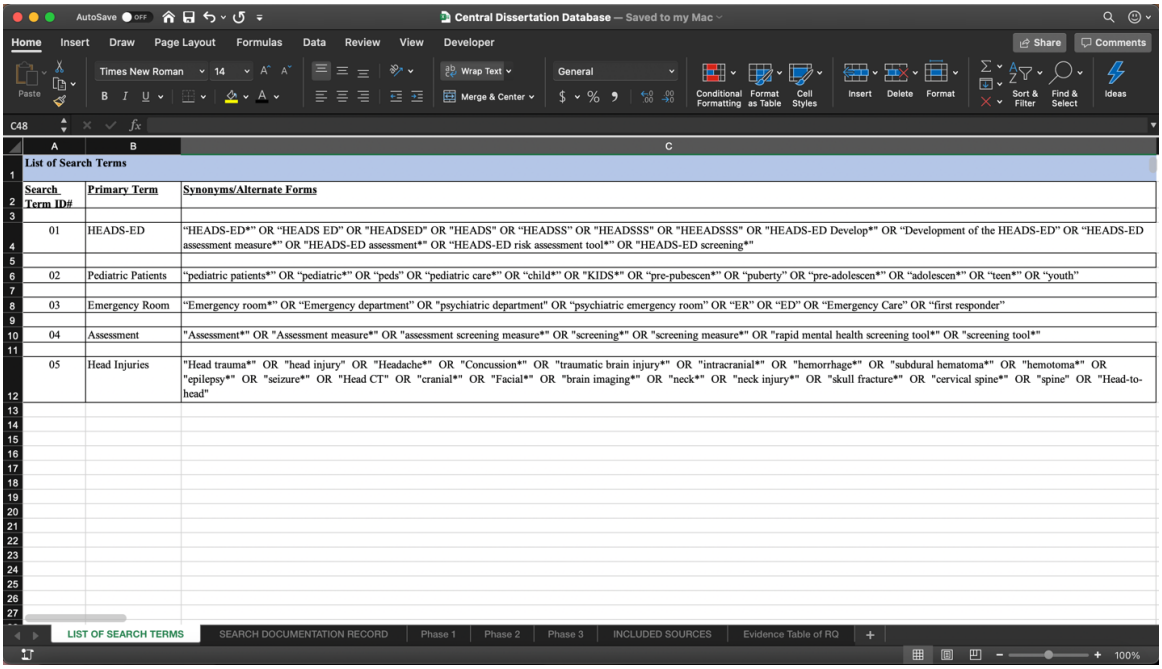
	asked of one parent, and 4 items obtained easily from the emergency medical record			following traffic-related injury or unintentional injury to children.
Brief Rating of Aggression by Children and Adolescents (BRACHA)	14 items	ED staff	3-19	Assesses risk of aggressive behavior by hospitalized children and adolescents.
Juvenile Victimization Questionnaire Screening Reduced Item Version (JVQ-R2)	12 items	Self-report (ages 10-17) Caregiver proxy report (ages 2-9)	2-17	Assesses five general domains: conventional crime, maltreatment, peer and sibling victimization, sexual victimization, and witnessing and other exposures to violence.
Adolescent Drinking Index	24 items	Self-report	12-17	Assesses four primary domains: loss of control of drinking, social and interpersonal indicators, psychological motivations for alcohol use, and physical indicators of alcohol use.
Alcohol Screening and Brief Intervention for Youth	2 items	ED staff	9-18	Quickly detects youth at risk for alcohol-related problems.
Alcohol Use Disorders Identification Test (AUDIT)	10 items	Physician or nurse or self-report measure	14-18	Assesses for unhealthy or risky alcohol use.

CRAFFT Screen	6 items	Self-report measure	12-21	Detects possible substance use and whether further discussion is warranted.
The National Institute on Alcohol Abuse and Alcoholism (NIAAA) Two-Question Alcohol Screen	2 items	Can be self-report measure or asked by ED staff	9-18	Assesses frequency of alcohol use by asking two questions about the patient's friends' use of alcohol and the patient's use of alcohol. The two items are tailored to children in elementary school (ages 9-11), middle school (ages 11-14), and high school (ages 14-18).
One Question Marijuana Screen (Alberta)	1 item	ED staff	Ages 13 and older	This one-item interview/question (i.e., "In the past year, how often have your used cannabis: 0 to 1 time, or greater than 2 times?) provides information about the teen's frequency of cannabis use and identifies youth who are at risk for alcohol use disorder

**Note: ED staff may include ED physicians, physicians assistants, nurse practitioners, nurses, psychologists, marriage and family therapists, and social workers.*

APPENDIX B

Central Dissertation Database

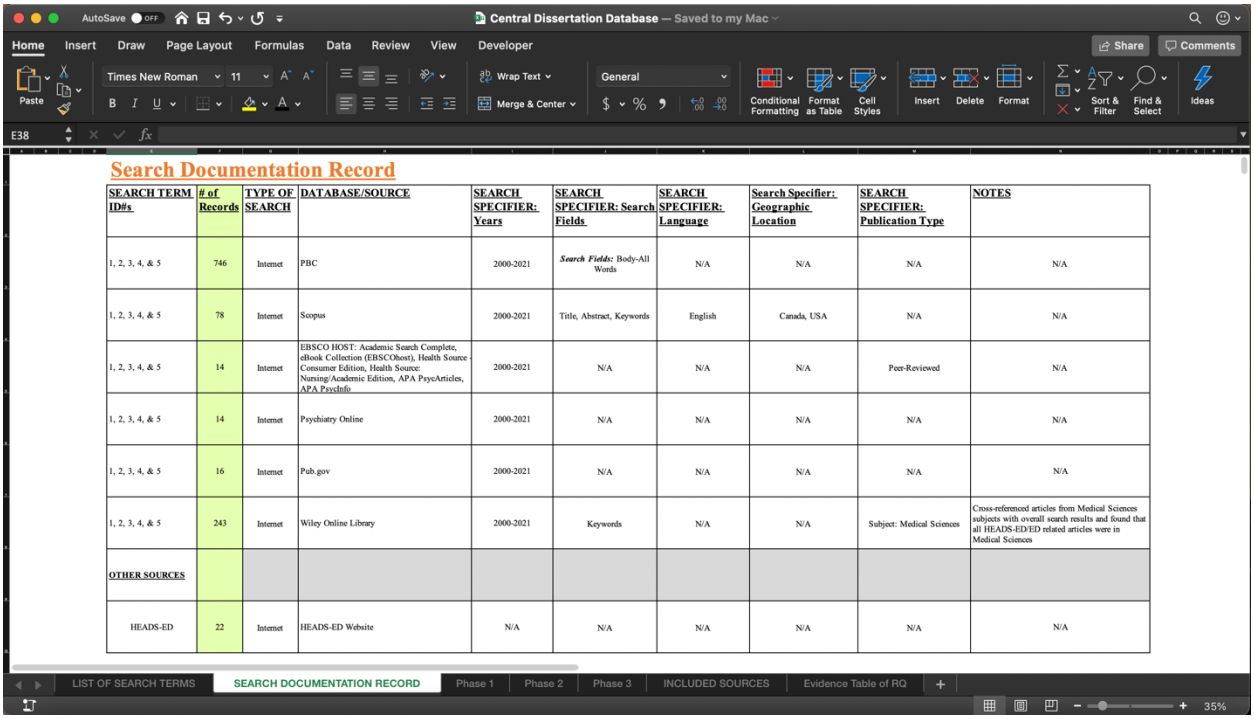


Central Dissertation Database — Saved to my Mac

Search Term ID#	Primary Term	Synonyms/Alternate Forms
		List of Search Terms
01	HEADS-ED	"HEADS-ED*" OR "HEADS ED" OR "HEADSED" OR "HEADS" OR "HEADSS" OR "HEADSSS" OR "HEEADSSS" OR "HEADS-ED Develop*" OR "Development of the HEADS-ED" OR "HEADS-ED assessment measure*" OR "HEADS-ED assessment*" OR "HEADS-ED risk assessment tool*" OR "HEADS-ED screening*"
02	Pediatric Patients	"pediatric patients*" OR "pediatric*" OR "peds" OR "pediatric care*" OR "child*" OR "KIDS*" OR "pre-pubescen*" OR "puberty" OR "pre-adolescen*" OR "adolescen*" OR "teen*" OR "youth"
03	Emergency Room	"Emergency room*" OR "Emergency department" OR "psychiatric department" OR "psychiatric emergency room" OR "ER" OR "ED" OR "Emergency Care" OR "first responder"
04	Assessment	"Assessment*" OR "Assessment measure*" OR "assessment screening measure*" OR "screening*" OR "screening measure*" OR "rapid mental health screening tool*" OR "screening tool*"
05	Head Injuries	"Head trauma*" OR "head injury" OR "Headache*" OR "Concussion*" OR "traumatic brain injury*" OR "intracranial*" OR "hemorrhage*" OR "subdural hematoma*" OR "hemotoma*" OR "epilepsy*" OR "seizure*" OR "Head CT" OR "cranial*" OR "Facial*" OR "brain imaging*" OR "neck*" OR "neck injury*" OR "skull fracture*" OR "cervical spine*" OR "spine" OR "Head-to-head"

APPENDIX C

Search Documentation Record

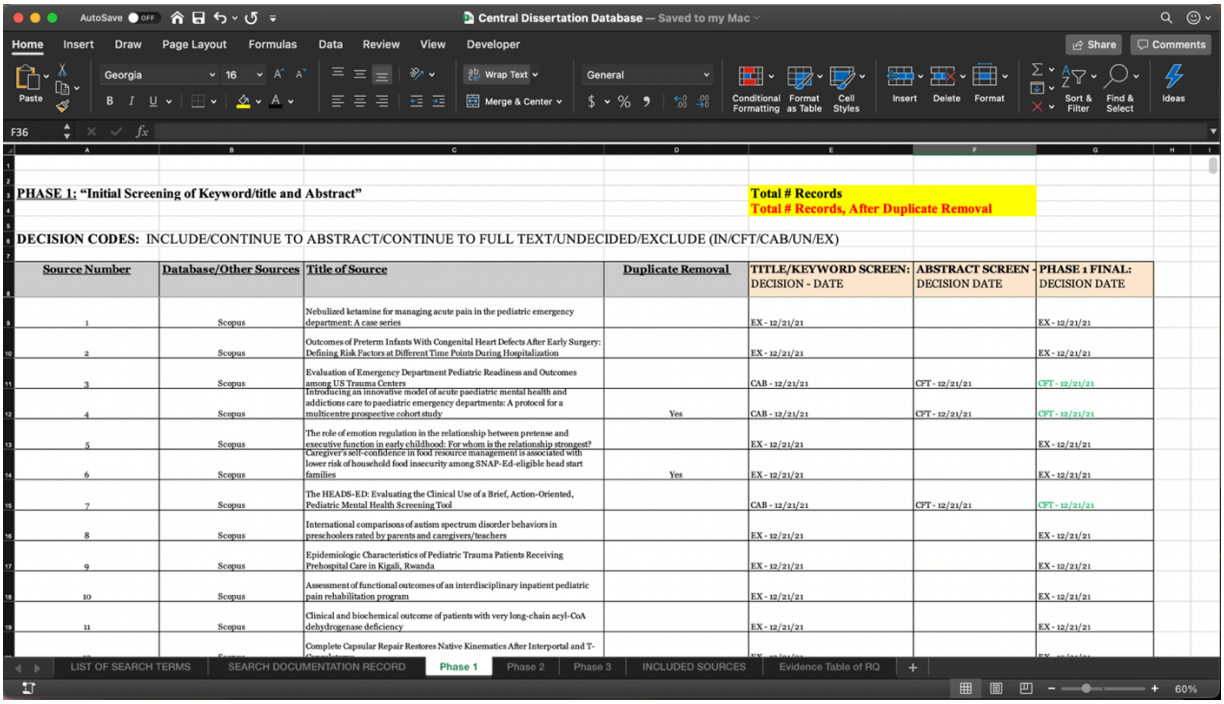


Search Documentation Record

SEARCH TERM ID#s	# of Records	TYPE OF SEARCH	DATABASE/SOURCE	SEARCH SPECIFIER: Years	SEARCH SPECIFIER: Search Fields	SEARCH SPECIFIER: Language	Search Specifier: Geographic Location	SEARCH SPECIFIER: Publication Type	NOTES
1, 2, 3, 4, & 5	746	Internet	PBC	2000-2021	*Search Fields:* Body-All Words	N/A	N/A	N/A	N/A
1, 2, 3, 4, & 5	78	Internet	Scopus	2000-2021	Title, Abstract, Keywords	English	Canada, USA	N/A	N/A
1, 2, 3, 4, & 5	14	Internet	EBSCO HOST: Academic Search Complete, eBook Collection (EBSCOhost), Health Source - Consumer Edition, Health Source: Nursing/Academic Edition, APA PsycArticles, APA PsycInfo	2000-2021	N/A	N/A	N/A	Peer-Reviewed	N/A
1, 2, 3, 4, & 5	14	Internet	Psychiatry Online	2000-2021	N/A	N/A	N/A	N/A	N/A
1, 2, 3, 4, & 5	16	Internet	Pub.gov	2000-2021	N/A	N/A	N/A	N/A	N/A
1, 2, 3, 4, & 5	243	Internet	Wiley Online Library	2000-2021	Keywords	N/A	N/A	Subject: Medical Sciences	Cross-referenced articles from Medical Sciences subjects with overall search results and found that all HEADS-ED/ED related articles were in Medical Sciences
OTHER SOURCES									
HEADS-ED	22	Internet	HEADS-ED Website	N/A	N/A	N/A	N/A	N/A	N/A

APPENDIX D

Phase 1: Initial Screening



Central Dissertation Database — Saved to my Mac

PHASE 1: "Initial Screening of Keyword/title and Abstract"

Total # Records
Total # Records, After Duplicate Removal

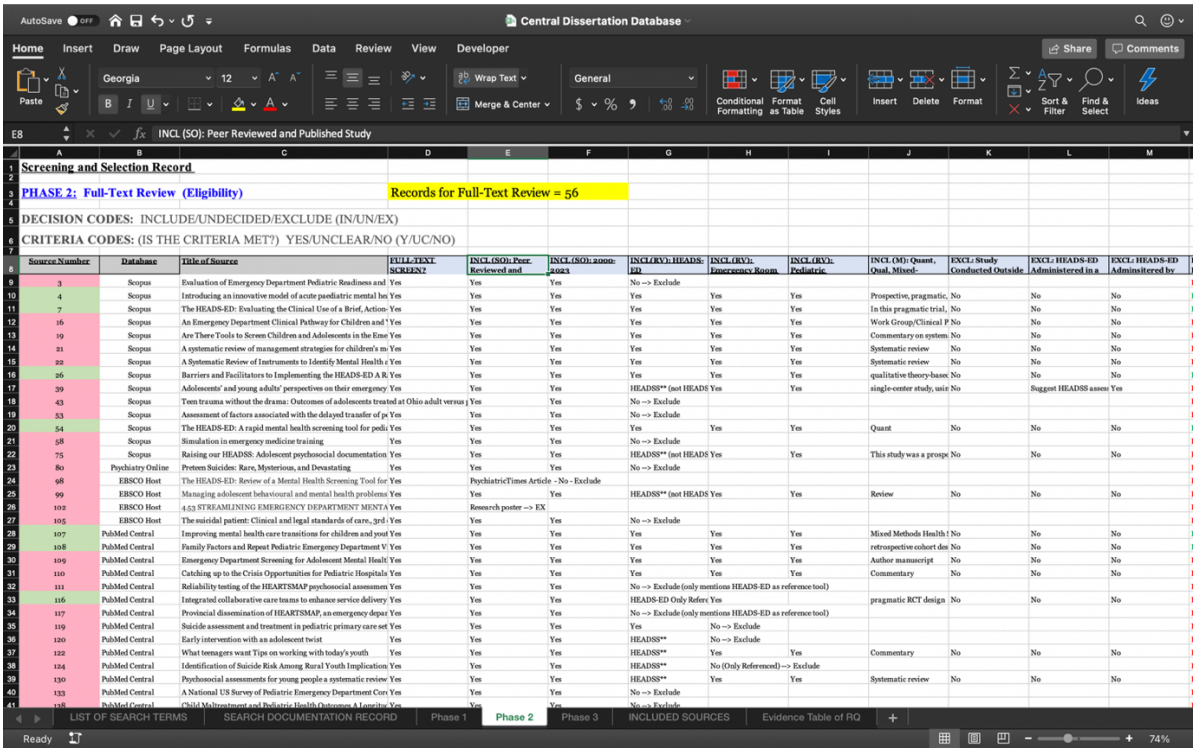
DECISION CODES: INCLUDE/CONTINUE TO ABSTRACT/CONTINUE TO FULL TEXT/UNDECIDED/EXCLUDE (IN/CFT/CAB/UN/EX)

Source Number	Database/Other Sources	Title of Source	Duplicate Removal	TITLE/KEYWORD SCREEN: DECISION - DATE	ABSTRACT SCREEN - DECISION DATE	PHASE 1 FINAL: DECISION DATE
1	Scopus	Nebulized ketamine for managing acute pain in the pediatric emergency department: A case series		EX - 12/21/21		EX - 12/21/21
2	Scopus	Outcomes of Preterm Infants With Congenital Heart Defects After Early Surgery: Defining Risk Factors at Different Time Points During Hospitalization		EX - 12/21/21		EX - 12/21/21
3	Scopus	Evaluation of Emergency Department Pediatric Readiness and Outcomes among US Trauma Centers		CAB - 12/21/21	CFT - 12/21/21	CFT - 12/21/21
4	Scopus	Introducing an innovative model of acute paediatric mental health and addictions care to paediatric emergency departments: A protocol for a multicentre prospective cohort study	Yes	CAB - 12/21/21	CFT - 12/21/21	CFT - 12/21/21
5	Scopus	The role of emotion regulation in the relationship between pretense and executive function in early childhood: For whom is the relationship strongest?		EX - 12/21/21		EX - 12/21/21
6	Scopus	Caregiver's self-confidence in food resource management is associated with lower risk of household food insecurity among SNAP-Ed-eligible head start families	Yes	EX - 12/21/21		EX - 12/21/21
7	Scopus	The HEADS-ED: Evaluating the Clinical Use of a Brief, Action-Oriented, Pediatric Mental Health Screening Tool		CAB - 12/21/21	CFT - 12/21/21	CFT - 12/21/21
8	Scopus	International comparisons of autism spectrum disorder behaviors in preschoolers rated by parents and caregivers/teachers		EX - 12/21/21		EX - 12/21/21
9	Scopus	Epidemiologic Characteristics of Pediatric Trauma Patients Receiving Prehospital Care in Kigali, Rwanda		EX - 12/21/21		EX - 12/21/21
10	Scopus	Assessment of functional outcomes of an interdisciplinary inpatient pediatric pain rehabilitation program		EX - 12/21/21		EX - 12/21/21
11	Scopus	Clinical and biochemical outcome of patients with very long-chain acyl-CoA dehydrogenase deficiency		EX - 12/21/21		EX - 12/21/21
		Complete Capsular Repair Restores Native Kinematics After Interportal and T-				

LIST OF SEARCH TERMS | SEARCH DOCUMENTATION RECORD | Phase 1 | Phase 2 | Phase 3 | INCLUDED SOURCES | Evidence Table of RQ

APPENDIX E

Phase 2: Full-Text Review



Central Dissertation Database

Screening and Selection Record

PHASE 2: Full-Text Review (Eligibility) — Records for Full-Text Review = 56

DECISION CODES: INCLUDE/UNDECIDED/EXCLUDE (IN/UN/EX)

CRITERIA CODES: (IS THE CRITERIA MET?) YES/UNCLEAR/NO (Y/UC/NO)

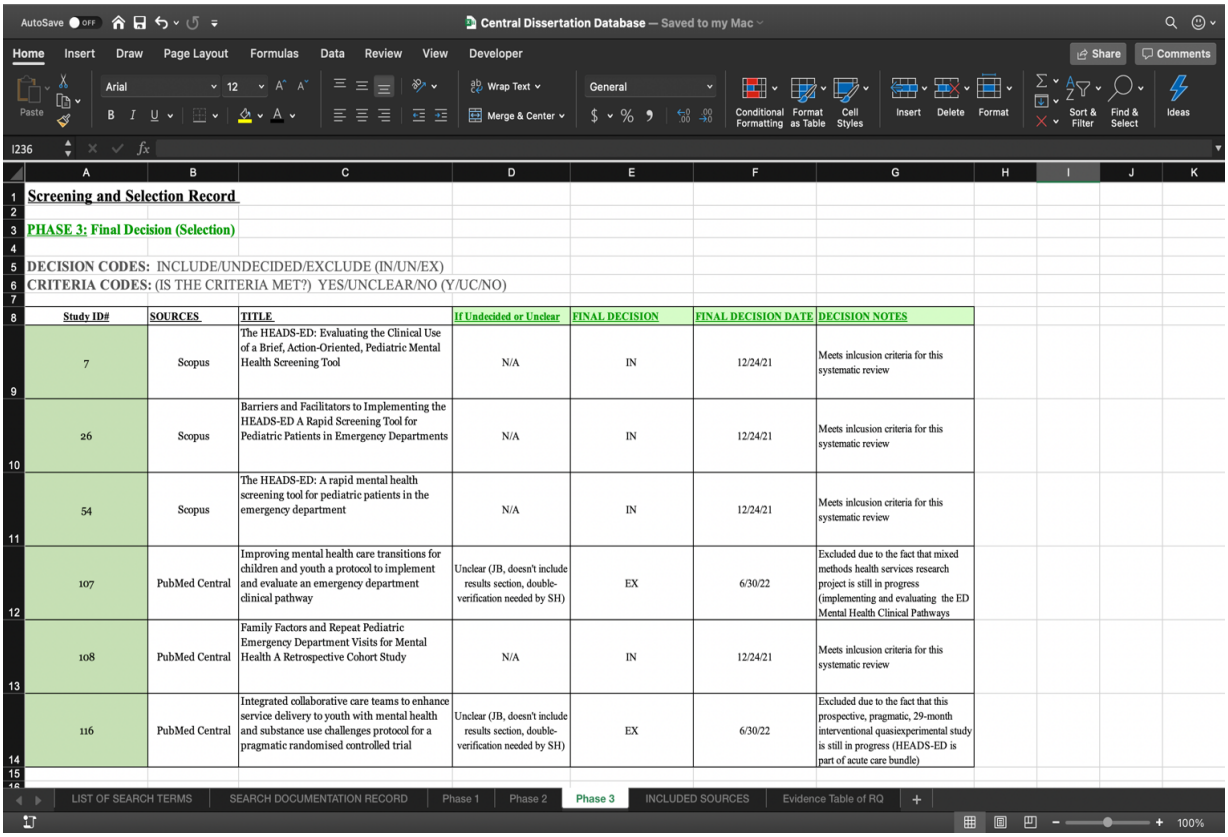
Source Number	Database	Title of Source	FULL-TEXT SCREEN?	INCL (SO): Peer Reviewed and	INCL (SO): 2000-2023	INCL (RV): HEADS-ED	INCL (RV): Emergency Room	INCL (RV): Pediatric	INCL (M): Quant, Qual, Mixed-	EXCL: Study Conducted Outside	EXCL: HEADS-ED Administered in a	EXCL: HEADS-ED Administered by
3	Scopus	Evaluation of Emergency Department Pediatric Readiness and	Yes	Yes	Yes	No --> Exclude						
4	Scopus	Introducing an innovative model of acute paediatric mental he	Yes	Yes	Yes	Yes	Yes	Yes	Prospective, pragmatic,	No	No	No
7	Scopus	The HEADS-ED: Evaluating the Clinical Use of a Brief, Action-	Yes	Yes	Yes	Yes	Yes	Yes	In this pragmatic trial,	No	No	No
16	Scopus	An Emergency Department Clinical Pathway for Children and	Yes	Yes	Yes	Yes	Yes	Yes	Work Group/Clinical P	No	No	No
19	Scopus	Are There Tools to Screen Children and Adolescents in the Eme	Yes	Yes	Yes	Yes	Yes	Yes	Commentary on system	No	No	No
21	Scopus	A systematic review of management strategies for children's m	Yes	Yes	Yes	Yes	Yes	Yes	Systematic review	No	No	No
22	Scopus	A Systematic Review of Instruments to Identify Mental Health	Yes	Yes	Yes	Yes	Yes	Yes	Systematic review	No	No	No
26	Scopus	Barriers and Facilitators to Implementing the HEADS-ED A R	Yes	Yes	Yes	Yes	Yes	Yes	qualitative theory-base	No	No	No
39	Scopus	Adolescents' and young adults' perspectives on their emergency	Yes	Yes	Yes	HEADSS** (not HEADS	Yes	Yes	single-center study, usir	No	Suggest HEADSS asses	Yes
43	Scopus	Teen trauma without the drama: Outcomes of adolescents treated at Ohio adult versus	Yes	Yes	Yes	No --> Exclude						
53	Scopus	Assessment of factors associated with the delayed transfer of pa	Yes	Yes	Yes	No --> Exclude						
54	Scopus	The HEADS-ED: A rapid mental health screening tool for pedi	Yes	Yes	Yes	Yes	Yes	Yes	Quant	No	No	No
58	Scopus	Simulation in emergency medicine training	Yes	Yes	Yes	No --> Exclude						
75	Scopus	Raising our HEADSS: Adolescent psychosocial documentation	Yes	Yes	Yes	HEADSS** (not HEADS	Yes	Yes	This study was a prospe	No	No	No
80	Psychiatry Online	Preteen Suicides: Rare, Mysterious, and Devastating	Yes	Yes	Yes	No --> Exclude						
98	EBSCO Host	The HEADS-ED: Review of a Mental Health Screening Tool for	Yes	PsychiatricTimes Article - No - Exclude								
99	EBSCO Host	Managing adolescent behavioural and mental health problems	Yes	Yes	Yes	HEADSS** (not HEADS	Yes	Yes	Review	No	No	No
102	EBSCO Host	4.53 STREAMLINING EMERGENCY DEPARTMENT MENTA	Yes	Research poster --> EX								
105	EBSCO Host	The suicidal patient: Clinical and legal standards of care., 3rd	Yes	Yes	Yes	No --> Exclude						
107	PubMed Central	Improving mental health care transitions for children and yout	Yes	Yes	Yes	Yes	Yes	Yes	Mixed Methods Health (	No	No	No
108	PubMed Central	Family Factors and Repeat Pediatric Emergency Department V	Yes	Yes	Yes	Yes	Yes	Yes	retrospective cohort des	No	No	No
109	PubMed Central	Emergency Department Screening for Adolescent Mental Healt	Yes	Yes	Yes	Yes	Yes	Yes	Author manuscript	No	No	No
110	PubMed Central	Catching up to the Crisis Opportunities for Pediatric Hospitals	Yes	Yes	Yes	Yes	Yes	Yes	Commentary	No	No	No
111	PubMed Central	Reliability testing of the HEARTSMAP psychosocial assessmen	Yes	Yes	Yes	No --> Exclude (only mentions HEADS-ED as reference tool)						
116	PubMed Central	Integrated collaborative care teams to enhance service delivery	Yes	Yes	Yes	HEADS-ED Only Refere	Yes		pragmatic RCT design	No	No	No
117	PubMed Central	Provincial dissemination of HEARTSMAP, an emergency depar	Yes	Yes	Yes	No --> Exclude (only mentions HEADS-ED as reference tool)						
119	PubMed Central	Suicide assessment and treatment in pediatric primary care set	Yes	Yes	Yes	Yes	No --> Exclude					
120	PubMed Central	Early intervention with an adolescent twist	Yes	Yes	Yes	HEADSS**	No --> Exclude					
122	PubMed Central	What teenagers want Tips on working with today's youth	Yes	Yes	Yes	HEADSS**	Yes	Yes	Commentary	No	No	No
124	PubMed Central	Identification of Suicide Risk Among Rural Youth Implication	Yes	Yes	Yes	HEADSS**	No (Only Referenced) --> Exclude					
130	PubMed Central	Psychosocial assessments for young people a systematic review	Yes	Yes	Yes	HEADSS**	Yes	Yes	Systematic review	No	No	No
133	PubMed Central	A National US Survey of Pediatric Emergency Department Con	Yes	Yes	Yes	No --> Exclude						
138	PubMed Central	Child Maltreatment and Pediatric Health Outcomes A Longitu	Yes	Yes	Yes	No --> Exclude						

LIST OF SEARCH TERMS | SEARCH DOCUMENTATION RECORD | Phase 1 | Phase 2 | Phase 3 | INCLUDED SOURCES | Evidence Table of RQ

Ready 74%

APPENDIX F

Phase 3: Final Decision (Selection)



Screening and Selection Record

PHASE 3: Final Decision (Selection)

DECISION CODES: INCLUDE/UNDECIDED/EXCLUDE (IN/UN/EX)
CRITERIA CODES: (IS THE CRITERIA MET?) YES/UNCLEAR/NO (Y/UC/NO)

Study ID#	SOURCES	TITLE	If Undecided or Unclear	FINAL DECISION	FINAL DECISION DATE	DECISION NOTES
7	Scopus	The HEADS-ED: Evaluating the Clinical Use of a Brief, Action-Oriented, Pediatric Mental Health Screening Tool	N/A	IN	12/24/21	Meets inlcusion criteria for this systematic review
26	Scopus	Barriers and Facilitators to Implementing the HEADS-ED A Rapid Screening Tool for Pediatric Patients in Emergency Departments	N/A	IN	12/24/21	Meets inlcusion criteria for this systematic review
54	Scopus	The HEADS-ED: A rapid mental health screening tool for pediatric patients in the emergency department	N/A	IN	12/24/21	Meets inlcusion criteria for this systematic review
107	PubMed Central	Improving mental health care transitions for children and youth a protocol to implement and evaluate an emergency department clinical pathway	Unclear (JB, doesn't include results section, double-verification needed by SH)	EX	6/30/22	Excluded due to the fact that mixed methods health services research project is still in progress (implementing and evaluating the ED Mental Health Clinical Pathways
108	PubMed Central	Family Factors and Repeat Pediatric Emergency Department Visits for Mental Health A Retrospective Cohort Study	N/A	IN	12/24/21	Meets inlcusion criteria for this systematic review
116	PubMed Central	Integrated collaborative care teams to enhance service delivery to youth with mental health and substance use challenges protocol for a pragmatic randomised controlled trial	Unclear (JB, doesn't include results section, double-verification needed by SH)	EX	6/30/22	Excluded due to the fact that this prospective, pragmatic, 29-month interventional quasiexperimental study is still in progress (HEADS-ED is part of acute care bundle)

APPENDIX G

Quality Appraisal Form

Author(s) and Year:
Study ID# (based on excel spreadsheet)

Methodology:

Specific Design/Inquiry Approach:

RATING SCALE: Strong=3 Good/Adequate=2 Weak=1 Missing=0 N/A

1. **Strength of Literature Review and Rationale for Study:**

(POSSIBLE CONSIDERATIONS: current and relevant references, background literature sufficiently comprehensive, Need/Rationale for study clearly stated, etc.)

2. **Clarity and specificity of Research Aims/Objectives/Questions:**

3. **Quality of research design or methodological approach:**

(POSSIBLE CONSIDERATIONS: provides rationale for design chosen, appropriateness for research questions, clear description of design and methodological approach, strength of design characteristics utilized (e.g., randomization, blinding, triangulation, etc.), potential confounds identified and addressed in some way, consideration of internal and external validity in design, specific design-based "risk of bias" criteria)

4. **Sample Selection and Characteristics:**

(POSSIBLE CONSIDERATIONS: adequacy of sample size in context of design, detailed description of sample characteristics, representativeness of sample, adequacy of sample characteristics in the context of research aims, detailed description of recruitment and selection of participants, extent of selection or sample bias).

5. **Measures / Data Collection Tools:**

(POSSIBLE CONSIDERATIONS: rationale for selection, appropriateness for assessing variables, development of new tool clearly described, psychometric properties (reliability, validity, utility) described, adequacy of psychometric properties, sufficiently comprehensive, etc.)

6. **Data Collection:**

(POSSIBLE CONSIDERATIONS: data collection procedures clearly described, intervention strategies and implementation described in detail, quality of data collected, attrition, etc.)

7. Analysis of Data:
(POSSIBLE CONSIDERATIONS: appropriateness of analysis for research questions and type of data, power and effect size presented, results presented clearly and comprehensively, were recommendations for policy standards accurately supported by reported data, etc.)

8. Conclusions and Interpretations:
(POSSIBLE CONSIDERATIONS: conclusions flow from analysis of data, congruity between the research methodology and the interpretation of results, etc.)

9. Discussion of Study Limitations:
(POSSIBLE CONSIDERATIONS: identifies and discusses limitations in the context of design/strategy utilized; e.g., various forms of bias, internal validity, external validity, ecological validity, transferability, credibility, transparency, etc.), comprehensiveness of limitations identified)

10. Consideration of culture and diversity:
(POSSIBLE CONSIDERATIONS: attention to diversity within sample, includes culturally appropriate methods and tools, avoids biased language, uses appropriate terminology, discussion of findings accurately represents participants, etc.)

11. OVERALL RATING:

EXEMPLARY	**STRONG**	**GOOD/ADEQUATE**	**WEAK**
(all "3"s)	**(mostly* "3"s)**	**(mostly "2"s)**	**(mostly "1"s)**

***"Mostly" is operationally defined as more than 50% of responses.**

Adapted from *Critical Appraisal Skills Programme (2018). CASP (Systematic Review) Checklist. https://casp-uk.net/wp-content/uploads/2018/01/CASP-Systematic-Review-Checklist_2018.pdf and Whiting P, Rutjes AWS, Reitsma JB, Bossuyt PMM, Kleijnen J. The development of QUADAS: a tool for the quality assessment of studies of diagnostic accuracy included in systematic reviews. BMC Medical Research Methodology. 2003;3:25 doi:10.1186/1471-2288-3-25*

APPENDIX H

Coding Manual

<table>
<tr><th colspan="4">CODING MANUAL</th></tr>
<tr><td colspan="4">PRIMARY RESEARCH QUESTION
According to the available research, to what extent has the HEADS-ED been administered to pediatric patients in an emergency room setting, and who has administered this assessment measure?</td></tr>
<tr><td>Coding Variable</td><td>Definition</td><td>Potential Examples</td><td>Specific guidelines for how to code</td></tr>
<tr><td rowspan="3">To what extent has the HEADS-ED been administered?</td><td>The frequency of HEADS-ED administration</td><td>Percentage of patients to which the HEADS-ED was given

Number times given to each patient (once upon admission, or once upon admission and once upon discharge)</td><td rowspan="3">Copy over direct quote from the discussion paragraph that addresses the research variable (include in column #3)

Write N/A in column #3 if discussion paragraph does not address variable

If discussion section includes or references prior studies that address the variable, then copy/include it in column #3 and note that the data extracted was from prior studies using parentheses and an asterisk . For instance, “Authors have recommended the HEADS-ED for disposition planning” (*review from prior study)

There may be overlap with secondary variables (e.g., to detect symptoms, disposition planning, etc). It’s not a mutually exclusive code and it is okay to have the variable/quote be repeated

Include any inductive data that may come up in column #11 on coding sheet (titled “Inductive”)</td></tr>
<tr><td>The type of patient population to whom it was administered</td><td>MH pediatric population or general pediatric population</td></tr>
<tr><td>If applicable, the reason for which the HEADS-ED was administered</td><td>Influential factors for how/when/why it is administered (e.g., high score on other assessment measure such as ASQ, patient presenting with specific psychiatric concerns)

HEADS-ED was used to identify symptom severity (how bad is the case?)</td></tr>
<tr><td>Pediatric Patients</td><td>A child or adolescent between the ages of 0 and 21</td><td>“12-18 years old”</td><td>List out populations in column #4 on coding sheet

Write N/A if discussion paragraph does not address the variable in column #4</td></tr>
</table>

			If discussion section includes or references prior studies that address the variable, then include it in column #4 and note that the data extracted was from prior studies using parentheses and an asterisk. For instance, "Authors have recommended the HEADS-ED for disposition planning" (*review from prior study) Include any inductive data that may come up in column #11 on coding sheet (titled "Inductive")
ED Setting	A hospital setting providing care to the acutely ill or injured (i.e., in which the HEADS-ED was administered)	*General ED setting, pediatric ED, psychiatric ED* *Does NOT include: urgent cares, partial hospitalization programs, substance use centers*	List out type of settings where HEADS-ED was administered in column #5 Write N/A in column #5 if discussion paragraph does not address the variable If discussion section includes or references prior studies that address the variable, then include it in column #5 and note that the data extracted was from prior studies using parentheses and an asterisk. For instance, "Authors have recommended the HEADS-ED for disposition planning" (*review from prior study) Include any inductive data that may come up in column #11 on coding sheet (titled "Inductive")
Administrator of the HEADS-ED	The professional title or role of person giving the HEADS-ED	*MD, PA, NP, RN and MH Professional*	List out administrators in column #6 according to discussion paragraph Write N/A in column #6 if discussion paragraph does not address the variable If discussion section includes or references prior studies that address the variable, then include it in column #6 and note that the data extracted was from prior studies using parentheses and an asterisk. For instance, "Authors have recommended the HEADS-ED for disposition planning" (*review from prior study) Include any inductive data that may come up in column #11 on coding sheet (titled "Inductive")

SECONDARY RESEARCH QUESTION 1 *Have researchers and authors discussed/recommended the HEADS-ED as a universal screening measure to detect mental health problems among pediatric patients? *Possible addition: If so, what have they said?****			
Coding Variable	**Definition**	**Potential Examples**	**Guidelines for how to code**
Universal screening measure	Authors mention potential utility and/or effectiveness of HEADS-ED as a measure that can be given to all child or adolescent patients in ED settings	*HEADS-ED given to pediatric patients who presented to the ED regardless of whether they present with psychiatric or nonpsychiatric concerns; "it is recommended that the HEADS-ED be administered as a universal screening measure to identify youth that may be at risk for mental illness"*	Copy or paraphrase quote that includes discussion and/or recommendation of HEADS-ED as universal screening measure in column #7 Write N/A in column #7 if discussion paragraph does not address the variable If discussion section includes or references prior studies that address the variable, then include it in column #7 and note that the data extracted was from prior studies using parentheses and an asterisk For instance, "Authors have recommended the HEADS-ED for disposition planning" (*review from prior study) Include any inductive data that may come up in column #11 on coding sheet (titled "Inductive")
To detect mental health problems among pediatric patients	Authors mention potential utility/effectiveness of HEADS-ED as a measure that can identify mental illness and/or risk factors for mental illness among pediatric patients Authors mention potential utility/effectiveness of the HEADS-ED as a screening measure for mental illness/mental health symptoms and/or the severity of symptoms	*HEADS-ED identifies pediatric patients at risk for acute mental illness or suicidality; predictive validity of HEADS-ED assessment in identifying psychiatric symptoms* ***Would NOT include**: "Identifying needs of patients" or "identifying the level of actionable need of MH symptoms" because it is not directly saying "Identifying*	Copy or paraphrase quote that includes discussion and/or recommendation of HEADS-ED as universal screening measure in column #8 Write N/A in column #8 if discussion paragraph does not address the variable If discussion section includes or references prior studies that address the variable, then include it in column #8 and note that the data extracted was from prior studies using parentheses and an asterisk For instance, "Authors have recommended the HEADS-ED for disposition planning" (*review from prior study) Include any inductive data that may come up in column #11 on coding sheet (titled "Inductive")

	If the authors discuss identifying needs or actionable needs, this would not be considered MH symptoms and therefore would not be coded as "to detect mental health problems" (see below for further information about actionable needs in "disposition planning"). If the authors discuss any other reason why they administer it, then put quotes that answer "no" (insert this information in the inductive column)	*depressive symptoms or suicidality" or "identifying symptoms of depression"* *"HEADS-ED was used to identify the severity of symptoms"*	
SECONDARY RESEARCH QUESTION 2 *Have authors or researchers discussed/recommended potential use of the HEADS-ED for disposition planning?* **Possible addition: If so, what have they said?**			
Coding Variable	**Definition**	**Potential Examples**	**Guidelines For How To Code**
Disposition planning	Authors mention potential utility/effectiveness of HEADS-ED to guide or facilitate concrete action steps for patient destination following discharge from ED Authors mention potential utility/effectiveness of HEADS-ED to identify actionable	*HEADS-ED guides/facilitates decision for admission to the hospital or appropriate MH facility, provision of referrals for psychiatric or MH consultation, discharge of the patient, provision of community referrals* *HEADS-ED has the ability to match patients to*	Copy or paraphrase quote that includes discussion about disposition planning in column #9 Write N/A in column #9 if discussion paragraph does not address the variable If discussion section includes or references prior studies that address the variable, then include it in column #9 and note that the data extracted was from prior studies using parentheses and an asterisk For instance, "Authors have recommended the HEADS-ED for disposition planning" (*review from prior study)

	needs or identified needs Authors mention potential utility/effectiveness of HEADS-ED to match patients to clinical services that meet their identified needs at the point of entry into an MH service	*appropriate services that meet their identified needs at the point of entry into an MH service.* *HEADS-ED was used to determine the level of care for patients*	Include any inductive data that may come up in column #11 on coding sheet (titled "Inductive")
SECONDARY RESEARCH QUESTION 3 *Have authors or researchers discussed/recommended the potential use of the HEADS-ED for policy standards?* **Possible addition: If so, what have they said?**			
Coding Variable	**Definition**	**Potential Examples**	**Guidelines For How To Code**
Policy standards	Authors mention potential use of HEADS-ED to inform standard policies and/or guidelines that influence healthcare decisions and improve, positively impact, or ensure consistency (e.g., in language, in decision-making process, etc.) across EDs	*HEADS-ED could inform standardized care or approach to MH assessment for pediatric patients in EDs*	Copy or paraphrase quote that includes discussion about policy standards in column #10 Write N/A in column #10 if discussion paragraph does not address the variable If discussion section includes or references prior studies that address the variable, then include it in column #10 and note that the data extracted was from prior studies using parentheses and an asterisk For instance, "Authors have recommended the HEADS-ED for disposition planning" (*review from prior study) Include any inductive data that may come up in column #11 on coding sheet (titled "Inductive")

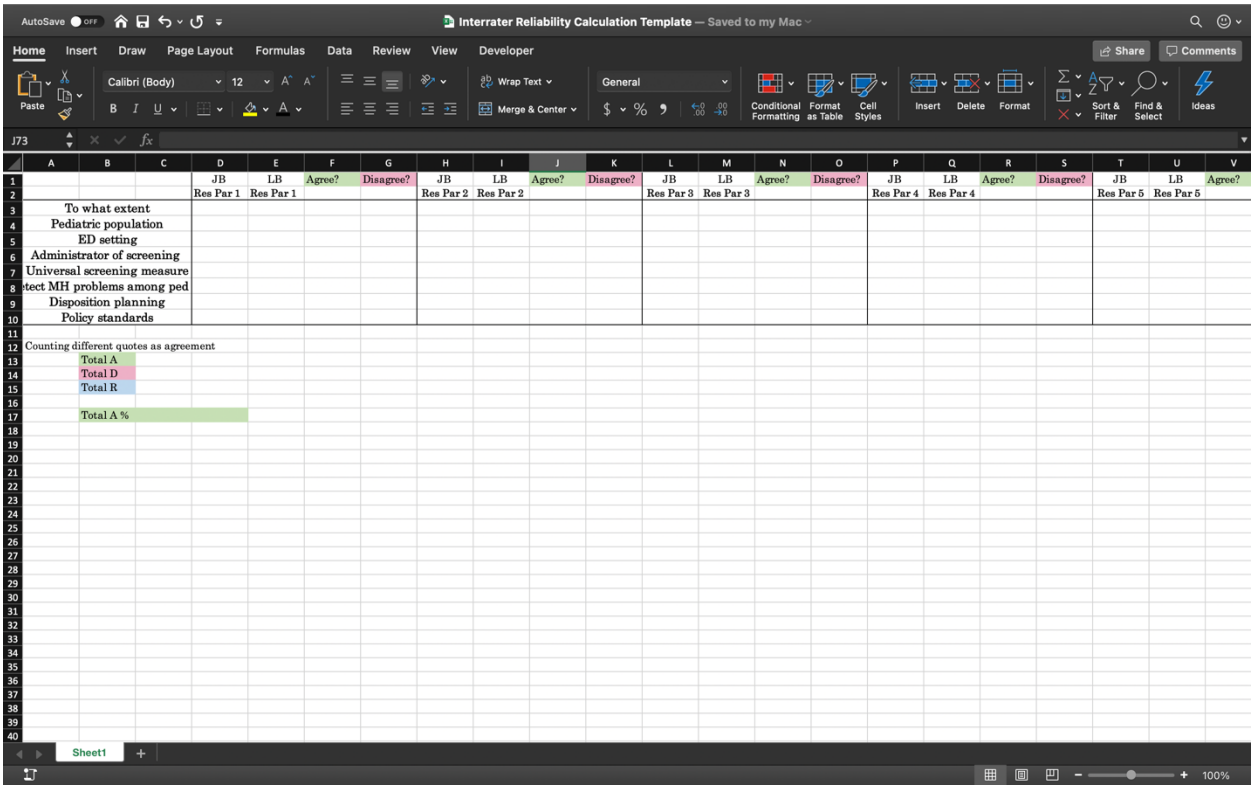
APPENDIX I

Data Collection and Extraction Form

Title:											
		PRIMARY RQ 1				**SEC RQ1**		**SEC RQ2**	**SEC RQ3**	**Inductive**	**Audit Notes**
Page/ par #	Discussion paragraph	To what extent	Pediatric population	ED Setting	Administrator(s)	Universal screening measure	Detect mental health problems among PP	Disposition Planning	Policy Standards	---	---
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8	Column 9	Column 10	Column 11	Column 12

APPENDIX J

Interrater Reliability Calculation Template



Interrater Reliability Calculation Template — Saved to my Mac

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V
1				JB	LB	Agree?	Disagree?	JB	LB	Agree?	Disagree?	JB	LB	Agree?	Disagree?	JB	LB	Agree?	Disagree?	JB	LB	Agree?
2				Res Par 1	Res Par 1			Res Par 2	Res Par 2			Res Par 3	Res Par 3			Res Par 4	Res Par 4			Res Par 5	Res Par 5	
3	To what extent																					
4	Pediatric population																					
5	ED setting																					
6	Administrator of screening																					
7	Universal screening measure																					
8	tect MH problems among ped																					
9	Disposition planning																					
10	Policy standards																					
11																						
12	Counting different quotes as agreement																					
13		Total A																				
14		Total D																				
15		Total R																				
16																						
17		Total A %																				

Sheet1

APPENDIX K

Coding Synthesis Sheet

	CODING VARIABLE	# Times Coded Across Studies	Overall Summary/Interpretation	Illustrative Quote
RQ1	To what extent			
	Pediatric population			
	ED Setting			
	Administrator			
RQ 2	Universal Screening Measures			
	To Detect MH Symptoms			
RQ 3	Disposition Planning			
RQ 4	Policy Standards			

APPENDIX L

GPS IRB Approval Notice

PEPPERDINE UNIVERSITY

Graduate & Professional Schools Institutional Review Board

March 2, 2021

Protocol #: **3221**

Project Title: The HEADS-ED: Universal Psychosocial Screening Tool for Pediatric Patients in Emergency Departments.

Dear Jessica:

Thank you for submitting a "GPS IRB Non-Human Subjects Notification Form" for *The HEADS-ED: Universal Psychosocial Screening Tool for Pediatric Patients in Emergency Departments* project to Pepperdine University's Institutional Review Board (IRB) for review. The IRB has reviewed your submitted form and all ancillary materials. Upon review, the IRB has determined that the above titled project meets the requirements for *non-human subject research* under the federal regulations 45 CFR 46.101 that govern the protection of human subjects.

Your research must be conducted according to the form that was submitted to the IRB. If changes to the approved project occur, you will be required to submit *either* a new "GPS IRB Non-Human Subjects Notification Form" or an IRB application via the eProtocol system (httpw://irb.pepperdine.edu) to the Institutional Review Board.

A goal of the IRB is to prevent negative occurrences during any research study. However, despite our best intent, unforeseen circumstances or events may arise during the research. If an unexpected situation or adverse event happens during your investigation, please notify the IRB as soon as possible. We will ask for a complete explanation of the event and your response. Other actions also may be required depending on the nature of the event. Details regarding the timeframe in which adverse events must be reported to the IRB and documenting the adverse event can be found in the *Pepperdine University Protection of Human Participants in Research: Policies and Procedures Manual* at https://community.pepperdine.edu/irb/policies/.

Please refer to the protocol number denoted above in all further communication or correspondence related to this approval.

On behalf of the IRB, we wish you success in this scholarly pursuit.

Sincerely,

Institutional Review Board (IRB)
Pepperdine University

cc: Mrs. Katy Carr, Assistant Provost for Research
Dr. Judy Ho, Graduate School of Education and Psychology IRB Chair