

Evaluating the Clinical Implementation of the Infant Crying & Parent Well-being Screening Tool

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Executive Summary

Abusive Head Trauma is the leading cause of child abuse deaths in the U.S., and inconsolable infant crying is its most common trigger (American Academy of Pediatrics, 2009; National Center on Shaken Baby Syndrome, 2019). Infant crying tends to peak during the second month postpartum (Brazelton, 1962; Hunziker & Barr, 1986), and the incidence of abusive head trauma peaks during this same period (Berkowitz, 2017; Reith et al., 2016). Research on infant crying has consistently found that excessive or inconsolable infant crying negatively affects caregivers, including elevated levels of depression and parenting stress, decreased parenting self-efficacy, feelings of rage and loss of control, and fears of harming the baby (Bebe et al., 1993; Edhborg et al., 2000; Katch, 2012; Maxted et al., 2005; Oldbury & Adams, 2015; Sitfter & Bono, 1998).

Pediatricians have traditionally screened for infant crying problems only by asking parents about the amount of crying to determine whether it is excessive (Wessel et al., 1954). However, only inquiring about the amount of infant crying does not reveal the parents' feelings or response to the crying. Research suggests that parental perception of infant crying is a better predictor of parent well-being than the amount of infant crying reported (Burkhardt, 2014; Katch, 2012; MacKenzie & McDonough, 2009).

Intended to address the absence of infant crying screening instruments, the Infant Crying and Parent Well-being (ICPW) screening tool (Katch & Burkhardt, 2014) was developed based on research supporting the importance of parental perception of infant crying. The ICPW was designed as a screening tool to prevent child maltreatment by providing a brief, standardized method for practitioners to identify families who struggle with infant crying. In a previous general population study, the ICPW score predicted parental depression, parenting stress, reduced parenting self-efficacy, and lack of co-parenting confidence (Katch & Burkhardt, 2018). As a next step, the present study was initiated to test the clinical utility of the ICPW screening tool in a pediatric clinic setting amongst pediatric resident trainees.

Methods

The present study aimed to answer the following research questions:

1. Does the ICPW increase provider awareness of infant crying problems for families with infants under 9 months of age?
2. Does use of the ICPW facilitate conversations around issues of infant crying and family support/co-parenting?
3. Does the ICPW provide a brief, simple method of determining which patients to refer?

To address these research questions, a sample of pediatric residents at the University of Chicago were recruited for a pilot implementation study. In early 2019, pediatric residents at two Federally Qualified Health Centers (FQHC) affiliated with the University of Chicago began using

the ICPW screening tool as part of their standard care with infants and families in their weekly continuity clinic. The ICPW tool contains five questions that can be administered verbally with the parent, as well as scoring information and guidelines. The tool also offers providers specific recommendations they can make based on the parent's score, such as a referral to a parent/infant support program. The current study evaluated the clinical implementation of the ICPW tool in pediatric clinics and tested the feasibility and usefulness of the tool using a pre-post design in a mixed-methods pilot study.

The study included three data collection activities completed by the pediatric residents:

- Baseline survey ($N = 17$)
- Post-visit survey, completed after each clinic visit during which they administered an ICPW screening tool ($N = 13$, total of 48 post-visit surveys)
- Follow-up interview ($N = 9$)

Findings

ICPW screening tool raised pediatric residents' awareness of infant crying problems

After using the ICPW screening tool in clinic visits with parents of infants up to 9 months of age, 88.9% of the sample of pediatric residents said that using the screening tool increased their awareness of infant crying problems. Residents shared that using the ICPW increased their awareness of how important it was to discuss issues of crying with parents of infants. Many also acknowledged an absence of these discussions in their practice prior to using the screening tool, as over 70% reported that they did not ask parents about infant crying during well-child visits prior to using the ICPW screening tool.

In the baseline survey, 100% ($N = 17$) of residents reported that they think pediatric residents would benefit from additional training around issues of infant crying. Residents highlighted a need for both information about resources related to infant crying to offer parents and training on how to counsel parents.

ICPW screening tool facilitated conversations about infant crying and co-parenting between pediatric residents and parents

Participant residents reported that the use of this screening tool facilitated a conversation about infant crying for 93.8% ($n = 45$) of the visits in which the tool was administered. Furthermore, 77.8% ($n = 7$) of interview respondents reported that using the ICPW screening tool changed how they talked to families about infant crying and fussing during well-child visits (birth–9 months). Five of the 9 interview respondents also reported that use of the tool changed how they talked to families about family support and co-parenting. Some residents also noted how well the ICPW prompted a discussion about co-parents who might not be in the room, a topic that can feel awkward or sensitive for residents.

The baseline survey revealed that asking questions about infant crying is not a part of well-baby exams as standard protocol. Prior to using the ICPW, 70.6% ($n = 12$) of residents did not ask parents about their infant's crying during well-child visits. The ICPW screening tool prompted the residents to ask parents not only about the duration of infant crying, but also about their feelings about their infant's crying and their parenting self-efficacy around soothing. Furthermore, the proportion of residents who reported that they provided anticipatory guidance—proactive counseling about emerging issues that a child and family may face (Schmitt, 2009)—about infant crying significantly increased from 7.7% at baseline to 69.2% during clinic visits after using the ICPW screening tool.

Regarding communication in general, residents reported that using the ICPW screening tool improved their interactions/communication with parents for almost two-thirds (64.6%, $n = 31$) of the visits. For the remaining 35.4% of the visits, residents reported that using the tool did not impact their communication with their patients. No residents reported that using the tool hindered their communication.

Pediatric residents found the ICPW screening tool helpful in clinic visits

Residents who used the ICPW screening tool found it to be helpful and beneficial to their practice. On a scale of 1 to 5, respondents rated the screening tool a mean score of 4.22 ($SD = 0.67$) for its helpfulness for detecting families with infant crying problems. Residents cited significant value in having a standardized protocol for screening families for infant crying problems, and they appreciated the usability and the brevity of the tool. All interview respondents ($N = 9$) said they would recommend the screening tool to other providers, citing two main reasons: 1) the tool “offers a standardized method for initiating the discussion about infant crying,” and 2) because it raises awareness about the importance of discussing infant crying.

Implications

Residents said that using the screening tool increased their awareness of infant crying problems, led them to recognize the importance of talking to parents with young infants about these issues, and encouraged them to use anticipatory guidance more frequently. Prior to using the ICPW screening tool, most residents tended not to ask families about infant crying or offer anticipatory guidance. Using the ICPW screening tool, however, facilitated a conversation about infant crying for almost all of the visits in which the tool was administered.

Findings from this pilot study also suggest that the ICPW screening tool provides an effective method for providers to screen for families at risk of detrimental consequences of infant crying problems. The ICPW provides a standardized method to ask how both parents are handling infant crying, resulting in clear delineations of when to refer a family for additional services, even if the co-parent is not physically present. The ICPW tool is the first infant crying screening tool developed specifically for use in a clinical setting, for which the need is great. Caregivers who report problematic or excessive infant crying are at greater risk for elevated levels of stress,

depression, and parent-infant relationship dysfunction (Edhborg, et al., 2000). The feelings of helplessness and frustration associated with caring for an inconsolable infant can potentially lead to violent actions (Barr, 2014; Krugman, 1983).

Well-child visits with a pediatrician are an ideal place to catch parents before they reach a point of heightened stress and an inability to cope with the infant crying that may cause them to feel desperate. Implementing the ICPW screening tool in pediatric settings has the potential to more effectively identify highly stressed families who have difficulty coping with infant crying. Additionally, using the ICPW in well-child visits provides an opportunity to screen for potential support needs and offer anticipatory guidance around infant crying. Implementing these preventative measures at well visits has the potential to reduce the number of caregivers arriving at the emergency department with a complaint of crying. This is particularly relevant considering inconsolable crying is one of the most common reasons caregivers take infants to the emergency department in the first few months of life (Chau et al., 2016). Therefore, implementing the ICPW tool with providers in pediatric clinics could reduce risk for infant abuse and associated health care costs.

Asking parents structured questions about parent well-being in pediatric visits not only provides health practitioners with a systematic method of capturing this information, but also encourages parents to be honest and reflective about their perspective on their infant's behavior, allowing them the space to process their concerns and fears. Parents can only receive support if they have the opportunity to express the challenges they experience. Similar to the regular screenings for postpartum depression, which occurs at over 97% of visits at these two health clinics (HRSA, 2016), systematizing the screening for infant crying problems embeds these conversations into the visit, normalizes these parents' feelings, and helps identify families that could benefit from additional support.

Introduction

Inconsolable infant crying is the most common trigger for abusive head trauma, the most lethal form of child abuse (American Academy of Pediatrics [AAP], 2009; National Center on Shaken Baby Syndrome, 2019). Approximately 1,300 cases of abusive head trauma are reported in the U.S. each year (National Center on Shaken Baby Syndrome, 2019). Children under six months of age are at the highest risk for abusive head trauma, as caregivers' feelings of helplessness and frustration around infant crying can lead to violent actions (Barr, 2014; Krugman, 1983; National Center on Shaken Baby Syndrome, 2019; Reijneveld et al., 2004).

Infant crying tends to peak, on average, during the second month of life and decreases around the third or fourth month (Brazelton, 1962; Hunziker & Barr, 1986). During this "crying peak," caregivers may have an especially difficult time soothing their infants, and incidences of abusive head trauma peak during this same period (Berkowitz, 2017; Reith et al., 2016). Furthermore, some infants cry and fuss at excessive levels, are resistant to soothing, and present a unique set of challenges for parents and caregivers (Long & Johnson, 2000). Most estimates suggest that approximately 20% of infants will cry and fuss excessively during the first months of life and these behaviors represent the most commonly reported parental concerns in the first year of life (Keefe et al., 2006).

Research on infant crying has consistently found that excessive crying and fussing negatively affects parents and family well-being. For example, excessive infant crying and fussing has been linked to parental depression, increased parenting stress, decreased parenting self-efficacy, and parent-infant relationship dysfunction (Edhborg et al., 2000; Katch, 2012; Sitfter & Bono, 1998). A comprehensive literature review on the effects of infant crying on the parent-infant relationship identified several outcomes, such as delays in bonding; lack of positive emotions; feelings of disappointment, rejection, and ambivalence towards the baby; feelings of rage and loss of control; and fears of harming the baby (Oldbury & Adams, 2015). These potentially detrimental effects have led researchers and practitioners to identify this as a public health issue that requires a primary universal prevention strategy to identify parents who are experiencing difficulties in coping with infant crying and to provide information and support during this period (Barr, 2012; Oldbury & Adams, 2015).

Traditionally, if health care providers screen for problems related to infant crying, they do so by asking parents to estimate the duration and frequency of their infants' crying. However, only asking about the amount of infant crying does not reveal the parents' feelings about or response to the crying. Research suggests that parental perception of infant crying is a better predictor of parent well-being than the amount of infant crying reported (Burkhardt, 2014; Katch, 2012; MacKenzie & McDonough, 2009). Perception of an infant's crying as a problem has been associated with parenting stress and anxiety, depression, and lower levels of parenting self-efficacy (Katch, 2012; Katch & Burkhardt, 2018; MacKenzie & McDonough, 2009; Pauli-Pott et al., 2000; Verhage et al., 2013). While the amount of infant crying can provide useful

information for health care providers to medically evaluate the infant, assessing parental perception of infant crying can offer critical insight into the well-being of parents.

Infant crying is one of the most common reasons parents seek medical attention during the first three months of life (Herman & Le, 2007), and parents concerned about their infant's crying often turn to their pediatricians for answers (Poole, 1991). In fact, advice in popular media—e.g., Babycenter (Montgomery, 2019)—as well as recommendations from medical professionals (AAP, 2016), instructs parents to contact their pediatrician if they have concerns about their infant's crying, as excessive crying could be an indication of a serious underlying condition (AAP, 2015; Freedman et al., 2009; Poole, 1991). Yet standard training for medical professionals often fails to include information about how to discuss infant crying and fussing with parents once a medical problem has been ruled out, typically only instructing physicians to reassure parents that their baby is healthy (Lam et al., 2019; Roberts et al., 2004). In fact, health care providers often have few answers to give parents and tend to use a “wait and see” approach to the problem, anticipating that the crying will diminish over time (Gatrad & Sheikh, 2004). Based on what we know about the link between crying and infant maltreatment (AAP, 2009; National Center on Shaken Baby Syndrome, 2019), both acute visits and well-baby visits provide vital opportunities for conversations about infant crying and assessing whether parents are concerned and/or stressed about their infant's crying. Parents who are distressed may require additional follow-up and support in an effort to mitigate increased risk, such as a parent/infant support program.

The Infant Crying and Parent Well-being (ICPW) screening tool (Katch & Burkhardt, 2014) was developed to address the absence of efficient infant crying screening instruments. Items in the ICPW are based on research supporting the importance of parental perception of infant crying. (See Appendix A, Infant Crying and Parent Well-being Screening Tool.) The ICPW was validated in a general population study to determine construct validity related to depression, parenting stress, parenting self-efficacy, and co-parenting confidence (Katch & Burkhardt, 2018). The ICPW is the first screening tool designed to provide a brief, standardized method for practitioners to identify families struggling with infant crying, ultimately intended to prevent child maltreatment. The tool can help practitioners who work with infants and families to (1) initiate a conversation about infant crying and parent well-being, and (2) determine which families to refer for additional support.

To test the utility of the ICPW screening tool in a pediatric clinic, this project includes a pilot implementation study with a sample of pediatric residents at the University of Chicago. In early 2019, pediatric residents began using the ICPW screening tool as part of their standard care with infants and families in two health clinics. The current study evaluated the clinical implementation of the ICPW tool and tested the clinical utility of the tool.

Methods

Sample

The study sample was a group of medical providers in the Pediatrics Residency Training program at the University of Chicago. All participating pediatric residents both provide weekly care to their continuity patients and receive clinical training at two Federally Qualified Health Centers (FQHC) affiliated with the University of Chicago. Residents were slated to begin using the ICPW screening tool as part of their standard care with infants and families and a total of 17 trainees participated in the study, with two residents declining to take part.

Procedure

The pediatric residents were asked to administer the ICPW screening tool to parents¹ at well-child visits and acute visits with infants from birth through 9 months of age. The ICPW screening tool asks parents if the infant's crying has recently been a problem or upsetting for them or their co-parent (another person who helps care for their child), if they have one. The tool also assesses parenting self-efficacy around infant soothing by asking whether they and their co-parent feel as though they have ways to soothe their infant. Duration of infant crying is captured on the tool by asking parents to estimate the number of hours their infant usually spends crying and/or fussing per 24 hours.

The developers of the ICPW screening tool (Burkhardt & Katch) led a 30-minute webinar to train the residents on administering and scoring the tool, as well as available resources they could use, such as referrals internally and externally and additional instruments that might be helpful to administer (e.g., Edinburgh Postnatal Depression Scale (Cox et al., 1987) or PHQ-9 (Kroenke et al., 2001) for depression). The residents began using the ICPW screening tool in their clinic visits in early 2019. The tool was provided to the residents in both English and Spanish. Completed ICPW tools were added to the patients' medical records.

An orientation to the study was also presented to the residents via webinar that described the study in detail. To capture any change in practice that occurred while using the ICPW screening tool, this study was designed to collect pre-post data from the residents and their feedback on the tool.

¹ For simplicity we refer to "parents" of infants, but this includes any caregivers that bring their infant to the clinic for medical visits.

Measures

Participating residents completed three data collection activities for the study. Gift cards to Amazon were provided as incentives for participation in each research activity. Measures included:

1. Baseline survey, completed online
2. Post-visit survey, completed by pen and paper immediately after each clinic visit during which they administered an ICPW screening tool
3. Follow-up interview post-study completion, conducted by phone

Residents completed a baseline survey to assess their current practice around infant crying in clinic visits. (See Appendix B, Baseline Survey.) The baseline survey contained both quantitative and qualitative questions that centered on if and how they discussed infant crying, including whether they provided resources or information about infant crying to families, whether they ever had a patient whose parent was worried/stressed about their infant's crying, and whether they had referred a parent or an infant due to excessive infant crying. This survey also contained basic demographic questions (e.g. age, gender, race/ethnicity).

Participating residents were asked to complete a brief post-visit survey immediately after each clinic visit with a family in which they administered the ICPW screening tool. The post-visit survey was developed for this study to measure provider perception of the utility of the tool and whether administering the tool raised any topics that otherwise might not have been discussed, such as infant crying or parental stress. Examples of information residents were asked to record for the post-visit survey include: the parent's score on the ICPW and whether the score was higher, the same, or lower than the provider anticipated; the provider's response to the patient's score (e.g., provided anticipatory guidance on infant crying, referred patient to support services); and whether the use of the screening tool raised any topics that otherwise might not have been discussed, such as infant crying or parental stress. (See Appendix C for Provider Post-Visit Survey.)

At the conclusion of the data collection period, residents who completed at least one post-visit survey were invited to complete a follow-up semi-structured phone interview (See Appendix D, Follow-up Interview Guide). Of the 13 residents who met this criterion, nine agreed to participate in the interview². The follow-up interview consisted of 15 questions, both quantitative and qualitative, and was intended to capture the participants' experiences using the ICPW screening tool, any perceived change in their practice, and the overall ease of use in a clinical setting. Interviews were recorded and transcribed for analysis.

² Four of the residents had graduated from the residency program and we were unable to contact them.

Research Questions

Table 1. Research Questions, Data Sources, and Analysis

Research questions:	Data sources:	Analysis plan:
1. Does the ICPW screening tool increase provider awareness of infant crying problems for families with infants under 9 months of age?	Baseline survey, Follow-up interview	Thematic analysis approach to compare themes in pre and post qualitative data around residents' awareness of families struggling with infant crying
	Follow-up interview	Frequency of residents who reported that the tool increased their awareness of infant crying problems
2. Does use of the ICPW screening tool facilitate conversations around issues of infant crying and family support/co-parenting?	Baseline survey, Follow-up Interview	Thematic analysis approach to compare themes in pre and post qualitative data about residents' conversations with parents
	Baseline survey, Follow-up interview	Pre-post comparison of the proportion of residents who asked parents about infant crying during clinic visits; frequency of residents who reported that the tool facilitated conversations around infant crying and support/co-parenting
	Post-visit survey	Descriptive statistics for whether use of the ICPW raised any of the following topics: infant crying, parent well-being, and/or co-parenting functioning
3. Does the ICPW screening tool provide a brief, simple method of determining which families to refer for additional services?	Baseline survey, Follow-up Interview	Thematic analysis approach to compare themes in pre and post qualitative data around identifying which families and when to refer; analyze themes in post interviews on the utility of the ICPW tool
	Post-visit survey	Descriptive statistics for patient scores and resident responses
	Follow-up interview	Frequency of residents who reported that the tool was beneficial and would recommend it to other providers

Analytic Approach

Qualitative

Follow-up interview data were recorded and transcribed using an internet-based transcription service, Temi.com. Using a thematic analysis approach (Braun & Clark, 2006), data were analyzed using the research questions as the grounding organizer. A codebook was developed to describe high-level domain themes addressing each research question, and then discrete codes were developed within each theme. Segments of text from interview data were assigned codes based on the theme that most related to the content of the text being analyzed. Text was then extracted and organized by codes, and a second coder reviewed the codes for reliability.

Quantitative

For the baseline survey, data were collected and managed using REDCap³ electronic data capture tools hosted at the University of Chicago (Harris et al., 2009; Harris et al., 2019). Post-visit surveys were completed by the residents via pen and paper and collected regularly by the research team. Data were entered into an electronic data file for analysis. Quantitative data collected in the interview were also entered into the electronic data file for analysis. Quantitative data were analyzed using R (R Core Team, 2019). Descriptive statistics were used to describe the data collected in the surveys and interviews. Independent categorical data were analyzed using chi-square tests, and paired (pre-post) categorical data were analyzed using McNemar tests. A significance level of $p < .05$ was used.

³ REDCap is a secure, web-based software platform designed to support data capture for research studies, providing 1) an intuitive interface for validated data capture; 2) audit trails for tracking data manipulation and export procedures; 3) automated export procedures for seamless data downloads to common statistical packages; and 4) procedures for data integration and interoperability with external sources.

Findings

Descriptive Statistics

The demographic characteristics of the full sample of pediatric residents (who consented to participate in the study and completed a baseline survey), post-visit survey sample, and interview sample are presented in Table 2. The demographics of the sample of residents who participated in the post-visit surveys and the sample who completed an interview were similar to those of the full sample.⁴

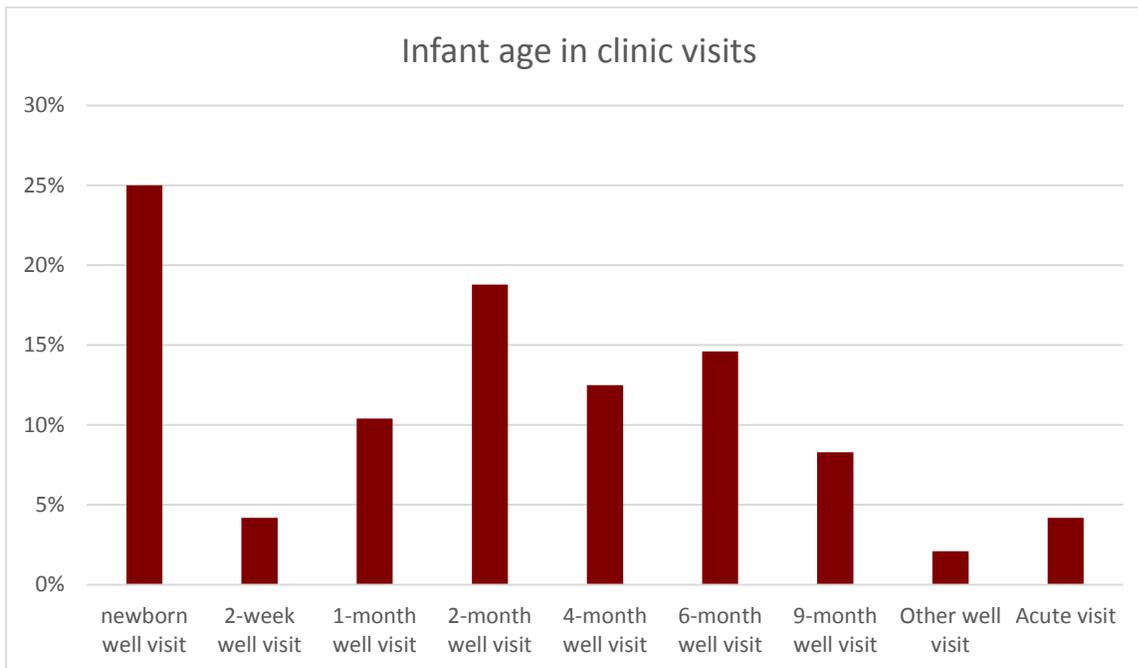
Table 2. Demographic Characteristics of Sample of Pediatric Residents

	Full sample (<i>N</i> = 17)	Post-visit survey sample (<i>N</i> = 13)	Follow-up interview sample (<i>N</i> = 9)
Gender	%	%	%
Female	70.6	69.2	66.7
Male	29.4	30.8	33.3
Age			
25-29	76.5	76.9	66.7
30-34	23.5	23.1	33.3
Race and ethnicity			
Asian/Pacific Islander	64.7	53.8	44.4
White	35.2	46.2	55.6
Year in residency program			
First	47.1	46.2	33.3
Second	29.4	38.5	44.4
Third	23.5	15.4	22.2

Post-visit surveys were completed after clinic visits in which the provider administered the ICPW screening tool. Thirteen residents completed a total of 48 post-visit surveys, ranging from 1 to 7 surveys per provider ($M = 3.7$, $SD = 2.0$). Residents had the option of administering the ICPW screening tool in English or Spanish, and most (79.2%, $n = 38$) screening tools were administered in English. Infant age and type of visit (well-child or acute) was recorded in each post-visit survey. The infant patient was younger than 2 months of age for 40% of visits during which the ICPW was administered (see Figure 1).

⁴ McNemar tests were conducted to compare the demographics of the subsamples and the full sample. All p-values were > .05.

Figure 1. Infant age and type of clinic visit when ICPW screening tool was administered (N = 48)



Note: Infant age at "Other well visit" was 5 months. Two acute visits were infants aged 3 months and 5 months.

To test for any group differences in the quantitative data collected at baseline, post-visit, and in the interview, chi-square tests were conducted. No differences were found by gender, age, race, or year in the program for any variable ($p > .05$).

Research Question 1: Does the ICPW increase provider awareness of infant crying problems for families with infants under 9 months of age?

In the follow-up interview, most residents ($n = 8$) said that using the screening tool did increase their awareness of infant crying problems, as shown in *Figure 2*. Interview responses revealed an absence of discussions about infant crying in their practice prior to using the screening tool:

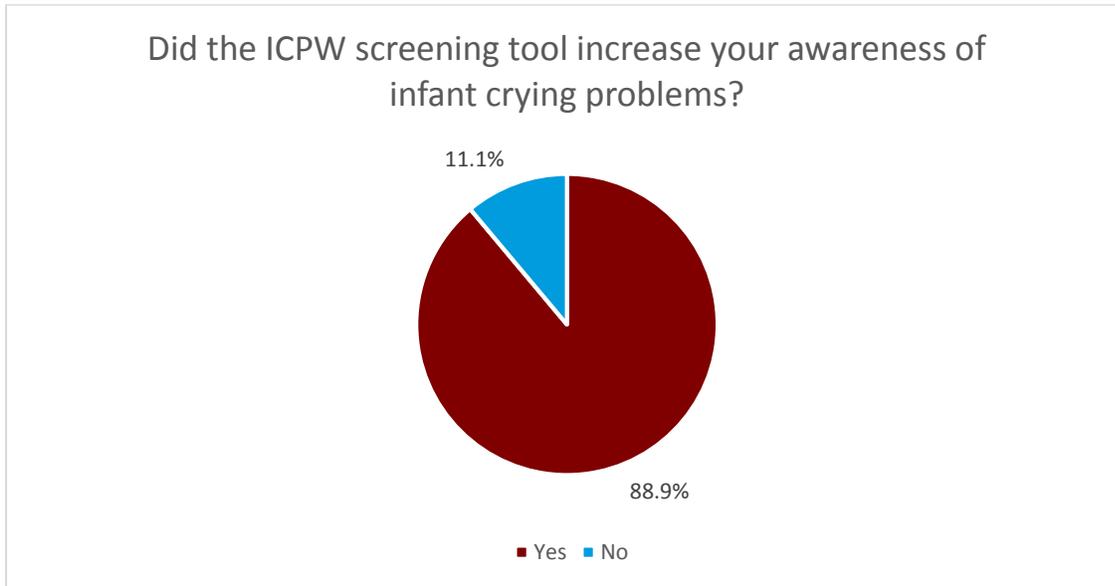
“Before, a lot of times, I didn't even think about asking about it unless the infant was crying a lot and seemed inconsolable during the visit, then I might bring it up. But otherwise if the baby seemed calm and the parents didn't ask anything about it, then I usually didn't bring it up myself.”

Residents also felt that using the screening tool reminded them of the importance of having these conversations about infant crying with parents:

“I think sometimes crying is not the first thing I think of when I'm medically evaluating a baby. And so I think it's helpful to prompt people to ask about it.”

“I will say, participating in this research study definitely has put [infant crying] much more on my mind again to screen for it and to be thinking about that versus in the past. I don't honestly know if I would have because number one, I wouldn't have been screening for it. And number two I think my threshold would have been a lot higher. So, I feel much better about it moving forward.”

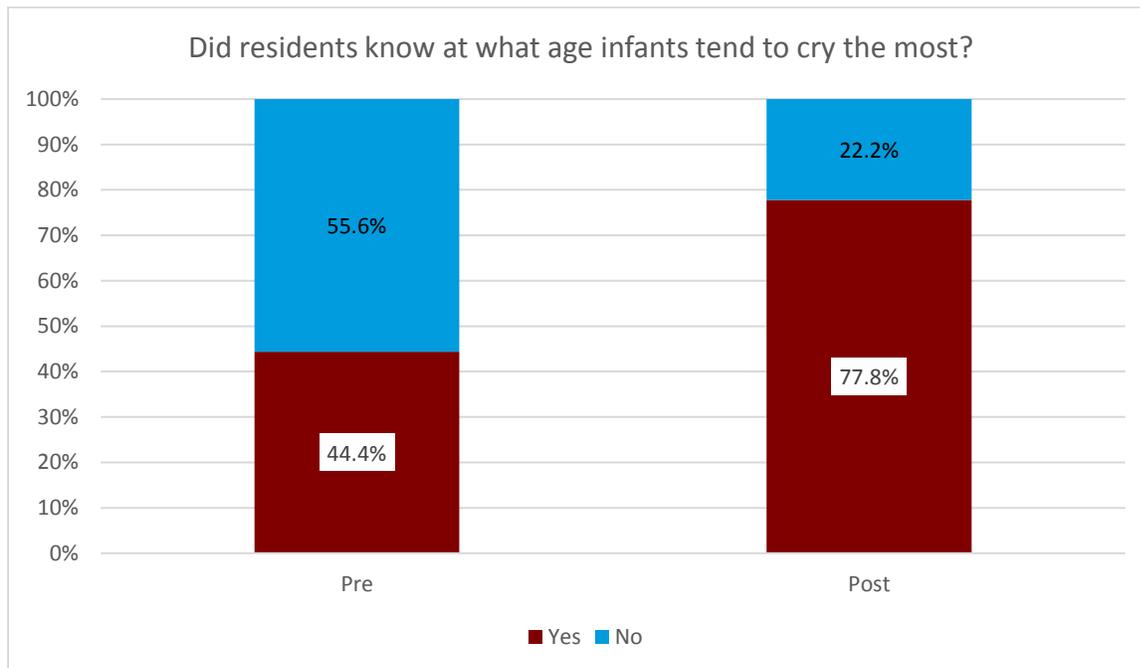
Figure 2. Resident Awareness of Infant Crying Problems (N = 9)



In the baseline survey, 100% (N = 17) of residents reported that they think pediatric residents would benefit from additional training around issues of infant crying. About half of the sample mentioned a need for training on how to counsel parents, and about half highlighted a lack of knowledge about resources to offer parents. One respondent responded, “We do not routinely learn about this topic in medical school or residency curriculum and it has a large impact on psychosocial stress.”

Residents were asked at both baseline and follow-up when infants tend to cry the most during the first 6 months of life. The proportion of residents who generally knew when the infant crying peak tends to occur—at around 1-2 months of age (Brazelton, 1962; Hunziker & Barr, 1986)—increased from 44.4% to 77.8% (see Figure 3), but this difference was not statistically significant according to McNemar’s test, $p = .12$, one-tailed. Nevertheless, one-third of the sample improved their understanding of basic infant crying information after using the ICPW screening tool. Possible reasons for this shift should be explored.

Figure 3. Resident knowledge of infant crying peak ($N = 9$)



$p = .12$

When residents were asked at baseline whether they have ever had an infant patient whose parent was struggling with their infant's crying (e.g., worried/stressed about their infant's crying), almost two-thirds of the sample said they have ($N = 11$, 64.7%). The follow-up question asked residents to identify how they knew that the parent was struggling. All 11 residents who responded that they had experienced a parent who struggled with infant crying indicated they were aware because the parent said they were feeling stressed or worried about the infant's crying. In the follow-up interview, the residents who said that some families seemed to be struggling either noticed signs of stress and/or depression in the parents before or while administering the screening tool, or the tool elicited information from the parent that indicated that they were struggling.

One resident said that a parent did not initially show signs of struggling with infant crying, "but then once I started asking the questions on the screening tool, then they did seem kind of frustrated and more upset, although they hadn't come in that way. But then once I probed a little bit more about the crying and it did sort of bring up some frustration."

Another resident commented that they wouldn't have asked these questions about crying otherwise, and that, "I think asking them sort of helped me figure out which parents really did need more support. And so it was helpful in that way to kind of know who could benefit from some services."

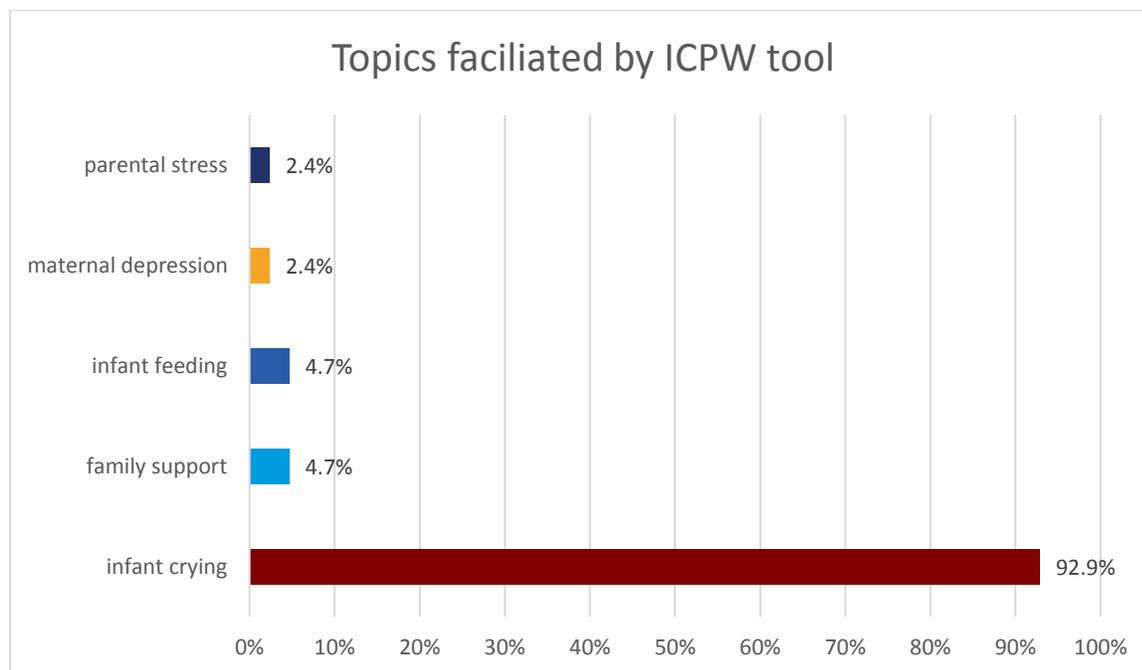
Research Question 2: Does use of the ICPW facilitate conversations around issues of infant crying and family support/co-parenting?

Prior to using the ICPW screening tool, most pediatric residents tended not to ask families about infant crying. The baseline survey revealed that 70.6% ($n = 12$) of residents did not ask parents about their infant's crying or fussing during well-child visits. The ICPW screening tool prompts residents to ask parents not only about the duration of infant crying, but also about their feelings about their infant's crying and their parenting self-efficacy around soothing.

In 22.9% ($n = 11$) of the visits in which the screening tool was administered, the provider indicated that the parent mentioned infant crying before the tool was administered. Therefore, in over three-quarters of visits, the ICPW screening tool raised the topic of infant crying without the parent prompting a conversation.

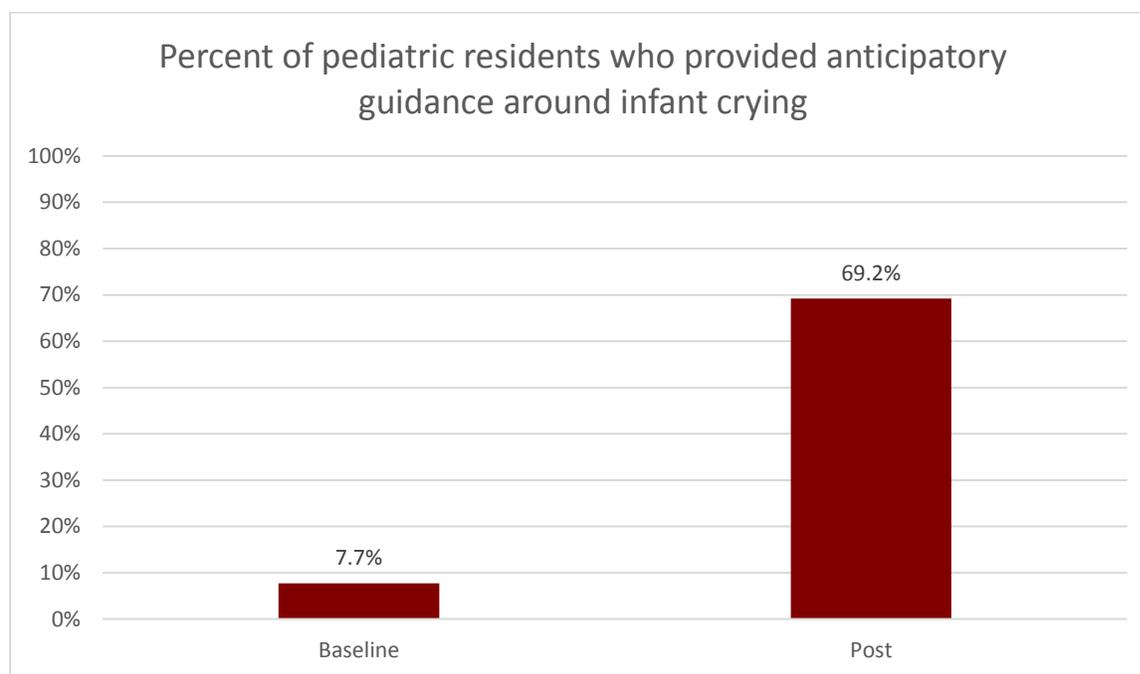
In the follow-up interview, we asked participant residents about any conversations that were facilitated by the use of this screening tool. Residents said that the use of the ICPW facilitated a conversation about infant crying for 93.8% ($n = 45$) of the visits in which the tool was administered. For 14.6% ($n = 7$) of the visits, residents noted that using the screening tool prompted a conversation about another topic: support, infant feeding, maternal depression, and parental stress. Figure 4 displays the topics facilitated by the ICPW tool, according to the residents.

Figure 4. Topics facilitated by ICPW screening tool at clinic visits ($N = 48$ clinic visits)



Both the baseline survey and the post-visit surveys asked residents whether they provided anticipatory guidance on infant crying during well visits from birth to 9 months. For the 13 residents who completed the baseline survey and at least one post-visit survey, the proportion of residents who reported that they provided anticipatory guidance on infant crying during clinic visits significantly increased from 7.7% at baseline to 69.2% after using the ICPW screening tool, $p = .027$ (McNemar Test, two-tailed), as shown in Figure 5.

Figure 5. Proportion of residents who provided anticipatory guidance on infant crying before and after using the ICPW screening tool ($N = 13$)



* $p < .05$

In the follow-up interviews, 77.8% ($n = 7$) of interview respondents reported that using the ICPW screening tool changed how they talked to families about infant crying and fussing during well-child visits (birth–9 months). About half (55.6%, $n = 5$) of the interview respondents also reported that use of the tool changed how they talked to families about family support and co-parenting.

Residents talked about the ICPW providing an easy way to facilitate conversations around infant crying, something they might not otherwise have brought up:

“I’d say it did [change the way I talked to parents about infant crying]. It forced me to actually screen for that when there’s just so many things to talk about

during a typical well child visit that a lot of times, infant crying was something that was neglected prior to this study for most patients. Again, unless the parents raised an issue about it.”

In the follow-up interviews, some residents also noted how well the ICPW allowed for a discussion around support systems and co-parents who might not be in the room or might not live with the respondent parent, a topic that can be sensitive or feel awkward for residents.

“I love the question about the co-parents. How are they handling it? It allowed me to dig in to that too, which I think is really important. Because you know, for the mom or the dad, one of them might be in really good shape and the other one might not at all. And that's not good. So the prompt to ask that even when they're not in the room, which could often be forgotten for that reason I think was really important.”

One resident specifically mentioned the benefit of using the tool with single parents:

“It definitely encourages you to ask questions about your support system if it's a single parent at the visit. And I think it helped with that.”

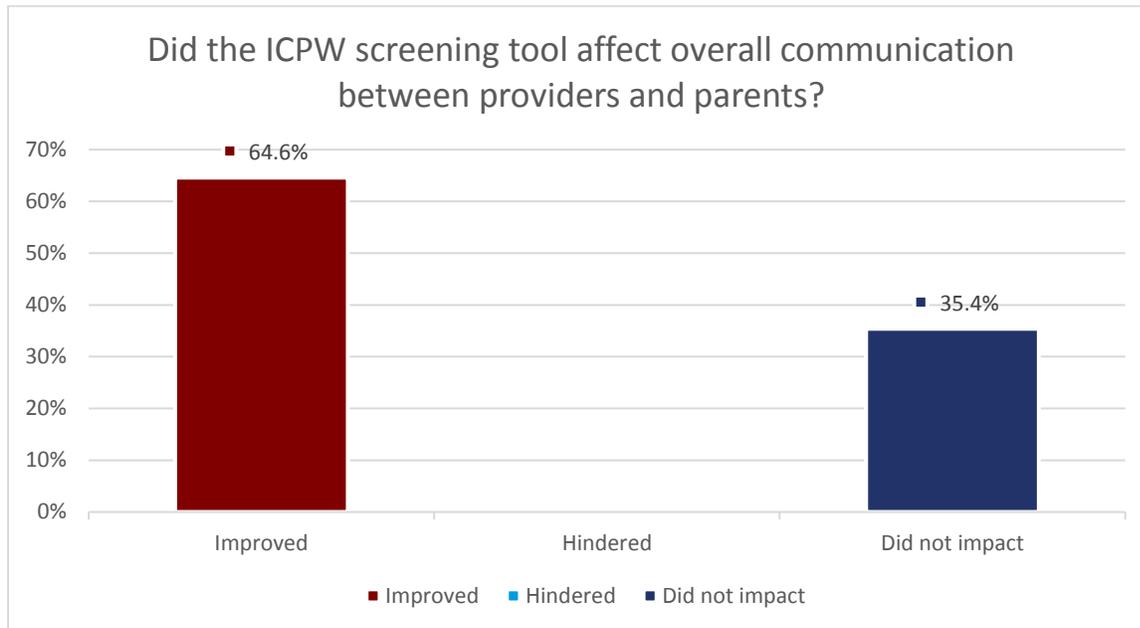
When asked how residents' discussions with parents were similar or different when using the ICPW screening tool compared to clinic visits when they do not use the tool, they mentioned how their conversations about infant crying and co-parenting had changed:

“Usually just more around the detail of the crying...When is it specifically the most, is it at night? Is it during the day? Is it surrounded by meals? Is your baby easily consolable or not? And then more so, do you really feel comfortable or do you not feel comfortable with this? And really trying to get digging a little bit more on parents' true comfort levels versus just their immediate quick response, so I felt like everything in a little bit more detail, which was really helpful.”

“I think it made me realize my own assumptions; sometimes parents didn't have co-parents when I thought they did, sometimes they did when I thought they didn't, so it was helpful to use that and understand that you have to ask specifically ask about co-parenting.”

For almost two-thirds of the visits, residents reported that using the ICPW screening tool improved interactions/communication between the provider and the patient (see Figure 6). For the remaining visits, residents reported that using the tool did not impact their communication with their patients. No residents reported that using the tool hindered their communication.

Figure 6. How use of the ICPW screening tool affected communication between residents and parents of infant patients ($N = 48$ clinic visits)



Research Question 3: Does the ICPW provide a brief, simple method of determining which patients to refer to services?

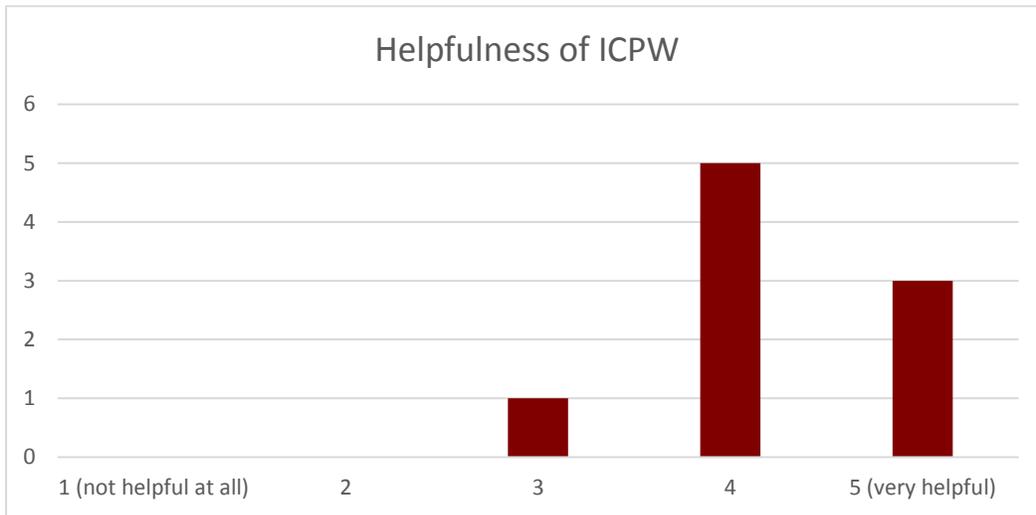
Helpfulness of the ICPW tool

Residents were asked the following question in the follow-up interview:

Overall, based on your experience of using the ICPW, how helpful would you rate this screening tool in determining if families are struggling with infant crying issues? Please rate the helpfulness of the tool on a scale of 1-5, where 1 means "not helpful at all" and 5 means "very helpful."

Residents who used the ICPW screening tool rated its helpfulness on a scale of 1 to 5, and the mean rating was 4.22 ($SD = 0.67$), with ratings ranging from 3 to 5 (see Figure 7).

Figure 7. Residents' ratings of helpfulness of ICPW screening tool for detecting families with infant crying problems (N = 9)



Residents reported that the ICPW was an easy to use screening tool that helped to facilitate conversations around issues of infant crying, family support, and helped them to identify parents needing support. In particular, residents in the follow-up interviews noted how much they appreciated having a standardized tool to help them address issues of infant crying:

“It offers a standardized method for initiating the discussion about infant crying. So I think that can be valuable for people, and it can help clinics to put in a standardized protocol for doing that type of screening.”

“I think it gives a good list of questions to ask, and if it were a standardized part of a clinic visit, like the ASQ or Edinburgh, it makes the issue of crying seem like a priority to address just by virtue of having that questionnaire available.”

Other residents talked about the ease of the tool and their appreciation for the brevity:

“I liked the fact that it was short and to the point. I feel like you could go in a lot of different ways in terms of asking a lot of questions, but I think as a screening tool I feel like it's appropriate and then you can always ask more in-depth questions based on the responses that you get.”

“I think that patients really appreciated was that it wasn't this like very long survey...and that's one of the reasons why I haven't been [asking about infant crying] on my own, because you're already crunched for time and you're thinking about so many things that that one inherently usually gets pushed off just because it's not an acute medical problem. [Infant crying] definitely has long-term implications, but it's easy to push that one off and forget about it. So I

appreciated that there was a way to address that in a really efficient, succinct manner.”

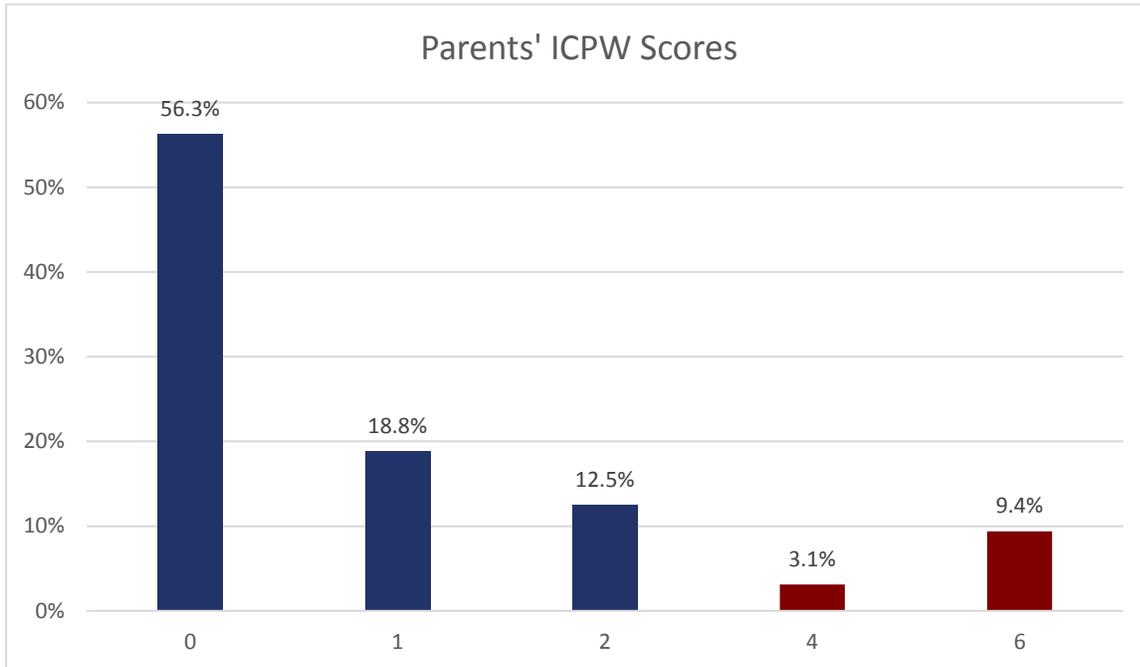
When asked whether they would recommend adding or removing any questions from the ICPW screening tool, most residents said they would keep it the same. One resident responded with the following:

“I'm sure it'd be great to have a deeper, more detailed question about this, but I think then you lose... its simplicity and efficiency. And those questions themselves do a really good job of prompting additional conversations. So I don't think anything else is needed. And I don't think that you could really take any of those out without losing a substantial question that would lead to more conversation.”

ICPW screening tool scores and responses

In the post-visit surveys, residents were asked to record the parent's score on the ICPW screening tool. Thirteen residents completed a total of 48 post-visit surveys after clinic visits in which they administered the ICPW screening tool. Of the 48 completed post-visit surveys, residents recorded parents' ICPW scores on 32 surveys, 6 of which were administered in Spanish. Possible scores can range from 0 to 8, as the score is the sum of four items, each with scores from 0 to 2. (The fifth item asking duration of infant crying is not included in the score.) The cutoff score on the screening tool is a 3: a parent who scores a 3 or greater may need support to help them cope with infant crying. In this study, scores ranged from 0 (suggesting no or very little distress around infant crying for either the parent or the co-parent) to 6 (suggesting much distress around infant crying for parent and co-parent), $M = 1.13$, $SD = 1.85$. As scores of 3 or greater signify a positive screen, 12.5% ($n = 4$) of the 32 parents whose scores were recorded on the post-visit survey had a positive screen. See Figure 8. All four of the families who screened positively on the ICPW completed the tool in English and were at the clinic for a 2-week or 1-month well-child visit for their infant, which aligns with the crying peak. It should be noted that one-third of data were missing because scores were not recorded by the residents in 16 of the post-visit surveys.

Figure 8. Parent scores on the ICPW screening tool ($n = 32$)

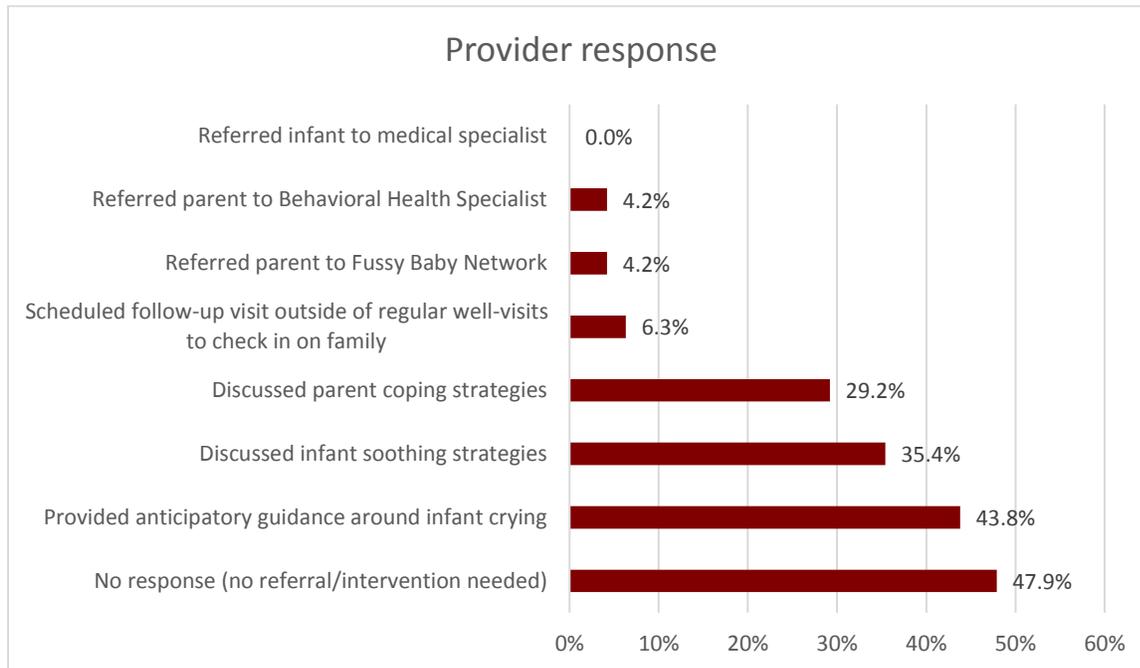


Note: ICPW score was not recorded for 33.3% ($n = 16$) of visits.

Possible scores on the ICPW screening tool can range from 0 to 8, and the cutoff score for a positive screen is a 3+.

Residents marked on the post-visit survey how they responded to the families after administering the ICPW screening tool. For almost half of the families, residents marked that no response was needed. However, in over 40% of clinic visits in which the ICPW screening tool was used, the resident's response was to provide anticipatory guidance around infant crying and discuss soothing strategies (see Figure 9). For the 10 tools administered in Spanish, the resident provided anticipatory guidance for 3 families, and for the remaining 7 they had no response.

Figure 9. Resident responses to parent after administering and scoring the ICPW screening tool (N = 48 families)



Residents' responses to infant patients and their parents differed based on the parents' ICPW scores. Residents were more likely to respond in the following ways if the parent had a positive ICPW screen:⁵

- discuss infant soothing strategies ($p = .033$)
- discuss parent coping strategies ($p = .017$)
- refer the family to Fussy Baby Network ($p = .011$)
- refer the family to a behavioral health specialist ($p = .011$)
- schedule a follow-up visit outside of regular well-child visits to check in on family ($p = .033$)

The post-visit surveys revealed that 22.98% ($n = 11$) of parents mentioned infant crying issues before completing the ICPW screening tool. The parents who brought up the issue of infant crying scored significantly higher on the ICPW screening tool ($M = 3.25$, $SD = 2.61$, $n = 8$) than those who did not bring up the topic of infant crying ($M = 0.42$, $SD = 0.65$, $n = 24$), $t(30) = 3.05$, $p = .018$.

Residents were asked to report whether the parent's score on the ICPW tool was higher than, lower than, or the same as they expected. Half (50.0%, $n = 24$) of the scores were the same as

⁵ Fisher's exact test was used to analyze whether resident responses differed based on positive or negative screens on the ICPW screening tool

the provider anticipated, 41.7% ($n = 20$) of the scores were lower than the provider anticipated, and 8.3% ($n = 4$) of the scores were higher than the provider anticipated.

In the follow-up interview, participating pediatric residents were asked, "Did the ICPW screening tool help you to determine which patients to refer?" All interview respondents who were asked this question ($n = 6$) said yes, the tool did help them determine who to refer. (The question was not relevant to the other 3 interview respondents, as the parents who completed the ICPW tool all scored a 0.)

When asked whether residents would recommend the ICPW screening tool to other providers, 100% of interview respondents ($N = 9$) said that they would. Residents were asked how/why it's beneficial to providers, and about half of interviewees ($n = 5$) credited the fact that it was a standardized protocol, and the other half ($n = 4$) said that it raises awareness about the importance of screening for and discussing infant crying. One resident emphasized the importance of efficiently identifying parents who are struggling with infant crying:

"We have a very simple tool that allows us to screen for something that can potentially be incredibly damaging to a child if we don't take care of it. And so the fact that we use that for the general wellbeing of the child as well as the family and to know that we're screening for that without feeling like we're giving up the whole appointment to crying is really important and really empowering to know that we're screening for something that...doesn't really have a lot of screening tools per se. And to do so in a systematic manner is really comforting as a physician as well. When we want to be data driven as opposed to just an offhand question that a parent might just miss and then you don't follow that down and then they really were struggling. But again, doing it quickly. So for all of those reasons that I thought it was very, very helpful and definitely worth recommending to other providers as well."

Discussion

Pediatric residents in this study found the ICPW screening tool to be helpful, easy to administer, and, beneficial to their practice. Residents endorsed the ICPW as an efficient method of screening for infant crying problems and would recommend the screening tool to other providers. The majority of residents said that using the screening tool increased their awareness of infant crying problems and their recognition of the importance of talking to parents with young infants about these issues. Prior to using the ICPW screening tool, most residents tended not to ask families about infant crying or offer anticipatory guidance. Using the ICPW screening tool, however, facilitated a conversation about infant crying for almost all of the visits in which the tool was administered. Residents provided anticipatory guidance more frequently when using the ICPW tool compared to baseline, suggesting that use of the tool prompted the sharing of anticipatory guidance. Other discussions outside of infant crying (i.e. depression and parental stress), that were prompted by using the ICPW are topics that have demonstrated significant relationships to key risk factors for parent and infant well-being outcomes in related studies (Belsky, 1984; Deater-Deckard, 2005; Murray & Cooper, 1997), suggesting the ICPW can be a conduit to these critical discussions.

Study results also suggest that exposure to the ICPW may have enhanced residents' knowledge about infant crying. All participating residents said at baseline that pediatric residents would benefit from additional training around issues of infant crying. While training on infant crying etiology was not provided to residents prior to or during the study, residents participating in this study might have taken their own initiative to review basic information about infant crying in preparation for expected conversations with parents. This hypothesis should be explored further in future research. Additionally, in follow-up interviews, residents acknowledged a lack of consideration for issues of infant crying in their standard practice before using the ICPW unless parents prompted the conversations. Likewise, they cited an increase in their recognition of the significance of infant crying discussions during their routine visits after using the ICPW. These findings are further supported by the residents' responses in the baseline survey suggesting a substantial need for additional training around issues of infant crying, including insight into how to talk to parents about these issues and potential resources.

Residents deemed the tool's question regarding the co-parent particularly helpful in their overall understanding of the family and existing support systems. Assessing how the parent attending the well-child visit is managing concerns about infant crying and soothing is critical, but equally important is understanding how a caregiver that is not present is coping with issues around crying and soothing strategies. The inclusion of the questions about the co-parent ("Has your baby's crying or fussing been a problem or upsetting to your co-parent recently?" and "Does your co-parent feel s/he has ways of soothing your baby when s/he cries?") are intentionally present on the ICPW to prompt the provider to inquire about the well-being and parenting efficacy of a co-parent not present in the room. Traditionally, mothers are often the primary

attende for infant well-child visits, with fathers attending approximately 20-30% of visits for children under 15 months of age (Cheng et al., 2018). The intentionality of this question on the ICPW was in recognition of the data demonstrating that in the majority of abusive head trauma cases, the offender is usually a caregiver or parent, with 65%-90% being male (Joyce & Huecker, 2019; National Center for Shaken Baby Syndrome, 2019). The ICPW provides an organized method to ask about how both parents are handling infant crying, resulting in clear delineations of when to refer a family for additional services, even when the co-parent is not physically present. No other validated screening tool exists for this purpose.

Parents who brought up infant crying issues before the pediatrician introduced the ICPW screening tool scored significantly higher on the tool, indicating that the tool identifies families who are having difficulty coping. Furthermore, residents reported that the screening tool helped them determine which patients to refer to support services. Residents also cited an appreciation for the ICPW as a standardized, brief tool to help facilitate conversations around topics they might not have addressed otherwise. Given the tight timeline to which pediatric providers are held in order to fulfill clinic demand, there is a need to include only the most pertinent, yet efficient addendums to the standard expectations of a well-child visit. Findings suggest that the ICPW screening tool provides an effective method for health care providers to screen for families at risk of detrimental consequences of infant crying problems.

The study took place at two FQHCs affiliated with the University of Chicago that primarily serve low-income families of color (97% of patients are racial and/or ethnic minorities and over 93% are at or below poverty level; HRSA, 2016). This population may face additional challenges and stressors compared to other pediatric clinic settings, as low-income families of color are at higher risk for elevated levels of parenting stress (Nomaguchi & House, 2013) and depression (Goldhagen, Harbin, & Forry, 2013). Furthermore, financial stress and depression increase risk for infant maltreatment (Cadzow et al., 1999). Screening this vulnerable population, who has the additional vulnerability of parenting infants, may be especially important in settings like an FQHC where families tend to have multiple risk factors.

Limitations

This pilot study tested the implementation of a new screening tool in pediatric clinics, which was an important next step in exploring the usability of this tool. While we discover important positive findings, we did have some limitations which are important to note. One of these was the small sample size and that we were limited to two pediatric clinics with a resident population representing a limited range of demographics. In future studies, a control group would strengthen the study design, along with a larger and more diverse sample including private practice, academic, and managed care clinic settings. Further, inclusion of other provider types such as practicing physicians not just trainees, and mid-level providers would help in terms of generalizing findings. And lastly studying the tool with other specialties would be helpful, such as family medicine, medicine-pediatrics, and obstetrics and gynecology, as they often see mothers and infants post-delivery and may find the tool helpful as well.

Due to the busy nature of the clinic schedule, data collection could not be burdensome to the residents, limiting the scope of exploration and data collection. Further, missing data on the post-visit survey presents a limitation to this study. Almost a quarter of the post-visit surveys did not include the total ICPW score. While the associated data on this post-visit survey did allow for sufficient analysis related to the goals of this study, the missing data suggests some procedural complications that should be addressed in future iterations of this study.

Because this study was focused on the residents' experience using the tool, the ICPW responses were not collected for the study. The ICPW tools were, however, added to the patient's medical records. The post-visit surveys allowed the residents to record the parent's score, but no other data from the ICPW tools were collected for this study. Analyzing the parents' responses to the items in the ICPW would allow for better understanding of the challenges. For example, is the parent who is present at the clinic visit with their infant more likely to report infant crying to be a problem than the co-parent? What is the mean duration of reported infant crying for parents who screen positively? Collecting demographic information from parents who complete the ICPW would also be informative to test for any group differences in scores. Future studies should aim to include parents as participants and incorporate the ICPW data.

Finally, residents were used as the main stakeholders to assess the clinical utility of the ICPW. More than 75% of the residents were in their first or second year of residency. Securing a cadre of more established pediatric providers to pilot the tool might elicit more sophisticated and nuanced feedback. However, it is also important to consider that the ICPW might, in fact, be particularly useful for less-experienced providers, or for providers who do not specialize in pediatrics (i.e. emergency department clinicians), to help facilitate screening for infant crying concerns when it is well outside of their discipline. Testing the ICPW screening tool with both new and experienced providers would allow researchers and providers to better understand for whom the tool is most useful.

Implications

Based on the strong evidence demonstrating the link between infant crying and infant maltreatment (AAP, 2009; National Center on Shaken Baby Syndrome, 2019), the topic of infant crying should be raised at all clinic visits with parents of young infants to assess whether parents are distressed about their infant's crying, as they may benefit from additional follow-up and support. The findings in this study suggest that having a standardized method to screen for infant crying concerns is an unmet need that this tool fulfills. Findings from the study will inform the design, data collection procedures, and protocol for future full-scale testing of the effectiveness of the ICPW screening tool.

It is important to note that only two of the visits when the ICPW was used were considered 'acute' visits, outside of regular well-child visits. Thus, most families were not attending the visit with a presenting concern related to infant crying. The four families who screened positively on the ICPW tool were at the clinic for well-child visits for their infants, and the residents referred

these families for additional support around crying issues and/or extended their conversations on soothing and support measures for the caregivers. This suggests the ICPW can be used to identify concerns around issues of infant crying that might not otherwise have presented as a primary concern. This is particularly interesting considering that inconsolable crying is one of the most common caregiver complaints during emergency department visits in the first few months of life (Chau et al., 2016), with accompanying data showing that an annual percentage of emergency department visits for infant crying ranges from 0.25% to 13.6%, presenting a significant challenge for ED clinicians (Allister & Ruest, 2014). Recommended evaluation procedure for emergency department clinicians includes the standard medical/physical exam, but also suggests the caregiver be “screened for their response to the crying, their social support, and fatigue” (Witkov & Kosoko, 2018; Chau et al., 2016). Currently, there is no standardized method for following these recommendations to screen for the “caregiver response” to the crying. The ICPW pilot study suggests that the ICPW screening tool could fulfill this need for emergency department clinicians. Further, using the ICPW in well-baby visits could potentially reduce the number of caregivers taking their infants to the emergency department presenting with excessive crying by providing an opportunity to screen for potential support needs and offer anticipatory guidance. Implementing the ICPW tool in both pediatric clinics and emergency departments has the potential to detect families who need additional support around infant crying, while also reducing health care costs.

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Appendices

Appendix A. Infant Crying & Parent Well-being (ICPW) Screening Tool (Katch & Burkhardt, 2014)

1. Has your baby's crying or fussing been a problem or upsetting to you recently?

Yes No

2. Has your baby's crying or fussing been a problem or upsetting to your co-parent* recently? (*Co-parent is another person that shares in the responsibility of caring for your baby, may be the baby's father or mother)

Yes No N/A (no co-parent)

3. Do you feel you have ways of soothing your baby when s/he cries?

- a. Not really
- b. Sometimes, but they don't always work
- c. Yes, I have strategies that usually soothe my baby

4. Does your co-parent feel s/he has ways of soothing your baby when s/he cries?

- a. Not really
- b. Sometimes, but they don't always work
- c. Yes, my co-parent feels s/he has strategies that usually soothe my baby
- d. N/A - I do not have a co-parent.

5. On average, how many hours a day (and night) would you say your baby spends crying/fussing?

_____ hours _____ minutes (per 24 hours)

Appendix B. Provider Baseline Survey

1. Do you typically ask families about infant crying and fussing during well visits even if they do not bring it up as a concern (birth–9 months)? [YES/NO]
 - a. IF YES: In what ways do you ask about infant crying and fussing? [*Select all that apply:*]
 - i. I ask how much the infant is crying (number of hours per day)
 - ii. I ask when the infant tends to cry
 - iii. I ask how the parent is feeling about the infant crying
 - b. IF NO: In your experience of well-visits, do parents tend to talk about their infant's crying without prompting? [YES/NO]
2. Do you typically provide anticipatory guidance on infant crying during well visits (birth–9 months)? [YES/NO]
 - a. IF YES: What kind of anticipatory guidance on infant crying do you provide during well visits? [TEXT RESPONSE]
3. Do you typically provide information/resources about infant crying? [YES/NO]
 - a. IF YES: As part of standard practice or only when a parent asks about/reports difficulty with infant crying? [SELECT ONE]
4. If a parent reports concerns about infant crying and there is not an evident medical issue, do you feel you have adequate information and/or resources to offer? [YES/NO]
5. Have you ever had a patient parent who was struggling with their infant's crying, e.g., worried/stressed about their infant's crying? [YES/NO]
 - a. IF YES: How did you know they were struggling?
 - i. Parent crying, flat affect, difficulty with communication, mental health symptoms
 - b. What was your response? [TEXT RESPONSE]
6. Have you ever diagnosed an infant with “colic?” [YES/NO]
 - a. IF YES: Did the family/families try any alternative treatments/therapies?
 - b. What guidance/resources did you offer the family? [TEXT RESPONSE]
7. Have you ever referred a parent and/or infant due to excessive infant crying? [YES/NO]
 - a. Medical referral (i.e. GI)
 - b. Internal services for behavioral health
 - c. External services for behavioral health
 - d. Fussy Baby Network
 - e. Other
8. When would you refer a parent and/or infant around infant crying? [TEXT RESPONSE]
9. Do you think pediatric residents would benefit from additional training around issues of infant crying? [YES/NO] Why or why not? [TEXT RESPONSE]
10. During the first 6 months of life, when do infants tend to cry the most? [TEXT RESPONSE]

Demographics:

11. Gender:
 - a. Female

- b. Male
 - c. Other (specify): _____
12. Age:
- a. Under 25
 - b. 25-29
 - c. 30-34
 - d. 35-39
 - e. 40-44
 - f. 45-49
 - g. 50-54
 - h. 55+
13. Race/Ethnicity [Select all that apply]:
- a. Black/African American
 - b. White
 - c. Hispanic/Latino
 - d. Asian/Pacific Islander
 - e. Native American
 - f. Other (specify): _____
14. Year in the program:
- a. First
 - b. Second
 - c. Third
 - d. Fourth

Appendix C. Provider Post-Visit Survey

1. Visit:
 - Newborn well-visit
 - 2-week well-visit
 - 1-month well-visit
 - 2-month well-visit
 - 4-month well-visit
 - 6-month well-visit
 - 9-month well-visit
 - Other well-visit – age of infant: _____
 - Acute visit – age of infant: _____
2. Did you administer the tool in English or Spanish?
 - English
 - Spanish
3. Patient's score: _____
 - Score was higher than I anticipated.
 - Score was the same as I anticipated.
 - Score was lower than I anticipated.
4. How did you respond to the patient's score? (*Select all that apply*)
 - Provided anticipatory guidance on infant crying
 - Discussed infant soothing strategies
 - Discussed parent coping strategies
 - Referred infant to medical specialist (Specify: _____)
 - Referred parent to Fussy Baby Network
 - Referred parent to FFHC Behavioral Health Specialist
 - Scheduled follow-up visit outside of regular well-visits to check in on family
 - Other: _____
 - No response (no referral/intervention needed)
5. Did use of this screening tool facilitate a conversation about infant crying?
 - Yes
 - No
6. Did use of this screening tool facilitate a conversation about anything else?
 - Yes. Specify topic: _____
 - No
7. Did parent bring up infant crying issues before completing the tool?
 - Yes
 - No
8. How did the use of the ICPW tool affect interactions/communication between your patient and you?
 - improved
 - hindered
 - did not impact

Appendix D. Follow-up Interview Guide

1. Do you typically provide anticipatory guidance on infant crying during well visits (birth–9 months)? Did you before use of this screening tool?
 - a. IF YES: What kind of anticipatory guidance on infant crying do you provide during well visits?
2. Do you typically provide information/resources about infant crying?
 - a. IF YES: As part of standard practice or only when a parent asks about/reports difficulty with infant crying?
3. If a parent reports concerns about infant crying and there is not an evident medical issue, do you feel you have adequate information and/or resources to offer? Has this changed since using the ICPW screening tool?
4. How many ICPW screening tools have you administered? Please tell us about your experience using the tool.
5. Did use of the ICPW screening tool change how you talk to families about infant crying and fussing during well visits (birth–9 months)? about family support/co-parenting? In what ways are your discussions with families similar/different?
 - a. Provide some examples of discussions you have had with families when using the screening tool.
6. Did any parents score 3 or higher on the ICPW screening tool?
 - a. IF YES: Did they exhibit any signs of struggling (e.g., parent crying, flat affect, difficulty with communication, other mental health symptoms)? What was your response? Did any parents report symptoms (other than those in the screening tool) that would indicate a need for additional support/referral?
 - b. IF NO: Did any families seem to require a referral/additional support related to infant crying who did not score at least 3 on the ICPW screening tool? Describe signs and symptoms. What was your response?
7. Have you ever referred a parent and/or infant due to excessive infant crying, including for parental stress or mental health concerns? To where did you refer the family and why?
 - a. Medical referral (i.e. GI)
 - b. Internal services for behavioral health
 - c. External services for behavioral health
 - d. Fussy Baby Network
 - e. Other

8. Did the ICPW screening tool help you to determine which patients to refer?
9. Have you ever diagnosed an infant with “colic?”
 - a. IF YES: Did the family/families try any alternative treatments/therapies? What guidance/resources did you offer the family?
10. Has use of the ICPW increased your awareness of infant crying problems for families with infants under 9 months of age?
11. During the first 6 months of life, when do infants tend to cry the most?
12. Do you think the ICPW screening tool is beneficial to providers? Please explain and provide examples.
13. Overall, and based on your experience of using the ICPW, how helpful would you rate this screening tool in determining if families are struggling with infant crying issues? Please rate the helpfulness of the tool on a scale of 1-5, where 1 means “not helpful at all” and 5 means “very helpful.”
14. Do you have suggestions on how the ICPW can be used to best support providers who are working with families of infants? Are there additional questions you would add to the ICPW? Questions you would remove?
15. Would you recommend using the ICPW to other pediatric providers?

Appendix E: Qualitative Analysis Codebook

Research Questions	Domain
Does the ICPW increase provider awareness of infant crying problems for families with infants under 9 months of age?	AWARENESS -importance -crying
Does use of the ICPW facilitate conversations around issues of infant crying and family support/co-parenting?	CONVERSATION FACILITATION -crying -support -co-parenting
Does the ICPW provide a brief, simple method of determining which patients to refer?	UTILITY OF TOOL -identification -ease of tool -referral -standardization
Theme	Code
The tool increased awareness about the <u>importance</u> of discussing/screening about/for infant crying	AWARE - Imp
The tool increased awareness about infant crying	AWARE - Crying
Using the tool helped providers discuss infant crying, it facilitated the conversation around infant crying	FAC - Crying
Using the tool helped providers discuss parent support, it facilitated the conversation around support	FAC - Support
Using the tool helped providers discuss the co-parent, it facilitated the conversation about/with the other parent	FAC – Co-parent
Using the tool helped provider identify parents who were struggling	UTI - Ident
The ICPW was easy to use	UTI - Ease
The ICPW helped providers identify which parents to refer	UTI - Ref
The ICPW provided a standardized measure to ensure the conversation happens – takes away the clinical judgement	UTI - Stand