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I, Courtney Levinson M.D., hereby submit this original work as part of the requirements for the degree of Master of Science in Clinical and Translational Research.

It is entitled:

Social-Emotional Problems Among Low Income Preschool-Aged Children and Potential Factors Affecting Early Intervention

Student's name: Courtney Levinson M.D.

This work and its defense approved by:

Committee chair: Erin Nicole Haynes, DrPH

Committee member: Kristen Copeland, MD

Committee member: Robert Kahn, MD, MPH



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Social-Emotional Problems Among Low Income Preschool-Aged Children and Potential Factors Affecting Early Intervention

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Graduate School
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by

Courtney Levinson
M.D. from Temple University, 2005
B.S. from Emory University, 2001

Committee Chair: Erin Haynes, DrPH

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ABSTRACT

Background: Preschool-aged children with social-emotional (SE) problems (e.g., behavior problems, delayed social competencies) are at high risk for later psychopathology. To develop protocols for addressing SE development in primary care, a better understanding is needed of the scope of the problem and parental attitudes toward potential interventions.

Objectives: To estimate prevalence of SE problems among preschool-aged children in a low-income clinical population, to explore correlates of SE problems, and to assess families' receptivity to referrals to services that promote health SE development.

Methods: 254 parents of 3- and 4-year-old children at two primary care clinics completed a standardized screen for SE problems (Ages and Stages Questionnaire: Social-Emotional (ASQ:SE)). Additional questions addressed childcare arrangements, parental depressive symptoms, and attitudes toward preschool and behavioral health referrals. Descriptive and chi-squared statistics and logistic regression were used to analyze the data.

Results: The sample was 91% Medicaid. 24% (95% CI 16.5-31.5%) of children screened positive for SE problems. 27% of parents screened positive for depression. 99% of parents reported they "would welcome" or "would not mind" a referral to preschool. Among parents of children who screened positive for SE problems, 79% reported they would welcome or would not mind a referral to a counselor or psychologist; only 16% had been referred previously.

Conclusions: One in four low-income preschool-aged children screens positive for SE problems, and most parents are amenable to referrals to preschool or early childhood mental health. This represents an opportunity for improvement in primary prevention and early intervention.

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INTRODUCTION

Social-emotional development has been defined as “the developing capacity of the child from birth through five years of age to form relationships and regulate emotions.”¹ Children who do not experience appropriate social-emotional development are at risk for both short-term and long-term consequences. In the short term, they are likely to have limitations in their ability to learn and may face exclusion from learning environments.^{2,3} In the long term, these children are at increased risk for mental illness, delinquency, poor achievement in school, and poor physical health in adulthood.⁴⁻⁷ Thus, the American Academy of Pediatrics recommends assessment of social-emotional development during well child care. However, specific guidelines for screening, primary prevention, and early intervention are lacking. While standardized screening tools and effective interventions exist, they have not been implemented systematically. To inform the development of protocols for effectively promoting social-emotional health in low-income children, for whom both needs for and barriers to treatment are likely to be greatest, there is a need to understand the true scope of social-emotional problems in urban primary care settings and the factors that may influence the success of connecting children with services.

Prior studies of social-emotional problems in preschool-aged children have used a variety of sampling methods and outcome definitions, resulting in a wide range of prevalence estimates (5% to 26%),⁸⁻¹¹ Few such studies have been performed in clinical primary care settings, and those have used more exhaustive assessments of the child’s mental health, rather than a screening tool that is practical for primary care use.^{9,12,13} Furthermore, while poverty has been established as a risk factor for social-emotional problems^{14,15}, studies of screening for social-emotional problems in urban primary care clinics serving low-income children have not been conducted. Thus, the need for further

mental health evaluation and treatment of preschool-aged children in such settings has not been established.

Multiple studies have demonstrated the effectiveness of high-quality preschool, home visiting, parenting programs, and early childhood mental health services in improving behavioral trajectories.¹⁶⁻²⁵ However, the process of connecting children with these services from primary care often is not successful,^{12,26-29} and the reasons for low rates of completed referrals are not well understood. In preparation for developing an algorithm for prevention and intervention, the family and social context of social-emotional problems, as well as parental attitudes toward a physician's referral to preschool and early intervention services, must be examined.

The purpose of this study was to estimate the prevalence of social-emotional problems among 3- and 4-year-old children in a low-income clinical population, to explore correlates of social-emotional problems, and to assess families' willingness to use services that promote healthy social-emotional development.

METHODS

Study Design and Sample

This was a cross-sectional study of patients aged three and four years old presenting for well child care or ill visits to two urban primary care clinics in Cincinnati, Ohio between June and November 2010. The study consisted of a written survey completed by parents at the clinic visit and a subsequent chart review. The study was approved by the institutional review board, and written informed consent was obtained from all subjects.

A consecutive sample of 3- and 4-year-old children was identified at the time of registration during clinic sessions when study personnel were present. Participants were

recruited during morning, afternoon, and evening sessions at a large academic hospital-based clinic, and afternoon sessions at a smaller affiliated community health center.

All 3- and 4-year-old children registering for any primary care visit were eligible, except those who met the following exclusion criteria: (1) Children with severe developmental delay were excluded because their expected social-emotional milestones differ from those of a typically developing child, and therefore the standardized screening tool was considered inappropriate for use with these children. (2) Children who were in acute distress were excluded so as not to interfere with their medical care. (3) Children who had been ill for more than three days were excluded because the screening tool had been normed in a population of healthy children. It was reasoned that acute illness may impact the child's behavior, and in completing the screen, the parent may recall the child's most recent behavior and not the behavior that is typical for the child when healthy. (4) Participants who were not English-speaking were excluded for feasibility reasons; less than one percent of each clinic population is non-English-speaking. (5) Children who were not accompanied by a parent or legal guardian were also excluded.

Survey Instrument and Administration

Parents completed an age-appropriate Ages and Stages Questionnaire: Social Emotional (ASQ:SE) and supplemental questions that addressed current preschool or childcare arrangements, attitudes toward referrals for the child's development, parental mental health, and demographic information.

The ASQ:SE is a standardized screening tool completed by parents. It has been validated as having a 71-85% sensitivity and 90-98% specificity, when compared to the gold standard Child Behavior Checklist and professional diagnosis of a social-emotional disability.^{30,31} The ASQ:SE has determined cutoff scores above which children require further evaluation, based on receiver operator characteristic analysis.³¹ Items on the ASQ:SE ask whether the child "most of the time," "sometimes," or "rarely or never"

displays behaviors indicative of normal development in the domains of self-regulation, compliance, communication, adaptive functioning, autonomy, affect, and interaction with people. Internal consistency, as measured by Cronbach's coefficient alpha, is 0.67 to 0.91.³¹ The screen takes 10 to 15 minutes to complete and is written at a 5th to 6th grade reading level.

The second part of the written survey included closed-ended questions about current childcare arrangements importance of various factors in childcare selection, and parental attitudes toward referral to preschool, home visiting, parenting classes, or early childhood mental health services by their child's physician. These survey questions were adapted from the National Study of Early Childhood Health,³² from the Early Childhood Longitudinal Study,³³ and from the Commonwealth Fund Survey of Parents with Young Children.³⁴ Parental depressive symptoms were measured with the Mental Health Index-5, a five-item screening tool that has an area under the receiver operating curve of 0.892 for detecting major depression³⁵ and a Cronbach's alpha of 0.84.³⁶ Given the prevalence of low literacy in the clinic population, respondents were offered assistance from research staff with completing the questionnaire.

The ASQ:SE was scored at the end of the patient's clinic visit. Parents were given the child's score, along with a verbal and written explanation and a list of local preschool and behavioral health resources.

Chart Review

To assess the validity of parent responses to questions about prior referrals, the electronic medical records of patients who failed the ASQ:SE were reviewed for a referral for a behavior problem at the study visit or a prior visit. This was done by a review of the assessment and plan section of all visit notes dating back to the child's first birthday.

An additional chart review was completed to ensure that respondents did not differ from non-respondents and that patients did not differ significantly between the two study sites. We reviewed the charts of a random sample of 100 patients who were 3 to 4 years old and seen at the two study sites during the study period. Patient race, insurance status, prior diagnosis of a behavior problem on the problem list, and maternal age were compared with these characteristics in a sample of enrolled patients.

Data Management and Statistical Analysis

Data were entered into and managed by REDCap electronic data capture tools hosted at Cincinnati Children's Hospital Medical Center.³⁷ Data were analyzed using SAS® software, Version 9.2.³⁸ The distribution of ASQ:SE scores as a continuous variable was described, including a calculation of the proportion of children with scores between the national median and the established cutoff score. Consistent with the ASQ:SE User's Guide, if the ASQ:SE component of the survey was missing greater than three answers, it was not included in our analysis.³¹

To examine associations between the ASQ:SE score (as a dichotomous pass/fail variable) and predictor variables that were selected a priori (positive parental screen for depression, insurance status, gender, race, parent age, and parent education), we first examined bivariate associations using Chi-squared or Fisher's exact tests. We then created logistic regression models using variables that had a significant bivariate association with ASQ:SE score or have been shown in the literature to be risk factors for social-emotional problems. These variables included positive parental screen for depression, insurance status, gender, race, and parent education. All possible 2-way interactions were considered in the full model. The model was reduced by dropping

interactions that were not significant at a level of 0.05. No interaction terms remained in the final model.

For the second part of the survey, summary statistics of parents' responses were expressed as proportions.

RESULTS

Participant Characteristics

Of 295 eligible parents who were approached, 254 parents (86%) agreed to participate. 231 were recruited from the Pediatric Primary Care Center and 23 from the Hopple Street Neighborhood Health Center. Participant characteristics are shown in Table 1. Patients included in the study were similar to the sample of all 3- and 4-year-old patients seen during the study period, with respect to race, insurance status, maternal age, and history of diagnosis of a behavior disorder.

ASQ:SE Scores

Prevalence of social-emotional problems was 24% (95% CI 16.5-31.5%) and did not differ by age. The distribution of ASQ:SE scores is shown in Figure 1. For the 36 month version of the ASQ:SE, the median score in our sample was similar to the national median. However, for the 48- and 60-month versions, the median in our sample was 45, as compared to 36 in the national normative sample.³¹ Among children who were screened using the 48- and 60-month version, 55% scored above the national median, with higher scores indicating greater risk for social-emotional problems.

Correlates of ASQ:SE Scores

Overall, 27% of parents completing the survey screened positive for depression. As shown in Table 2, children with parents screening positive for depression had more than three times greater odds of screening positive for social-emotional problems than those whose parents did not screen positive for depression. In addition, children insured through Medicaid had greater odds of screening positive on the ASQ:SE than children with private insurance, and boys had greater odds of screening positive than girls.

Preschool Use and Attitudes

Current childcare arrangements are shown in Table 1. 64% of parents reported that their children were enrolled in Head Start or another center-based preschool or child care program. Almost all parents reported that they would be receptive to a referral to preschool (85% would welcome the referral, 14% would not mind at all). When asked whether each factor was “very important”, “somewhat important”, or “not important” in selecting childcare or preschool, 97% of parents reported that “a place that will help prepare your child for kindergarten” was “very important”. The percentage of respondents rating this factor as “very important” was greater than that of any other factor listed on the survey, including: the availability of care when the child is ill (73%), proximity to home (66%), cost (79%), class size (60%), hours (85%), the teacher’s childrearing beliefs (67%), the teacher’s racial background (7%), the arrangement’s religious affiliation (10%), and whether the care provider is already known to the family (17%).

Prior Referral and Attitudes Toward Referral to Behavioral Health Services

No parents reported having been referred previously to parenting classes, and 6 reported a previous referral to a home visiting program. Among parents of the 62

children who were identified as having social-emotional problems by the ASQ:SE, only 10 (16%) reported that the child had been referred previously to a developmental specialist, counselor, psychologist, or psychiatrist. Upon chart review, 13% had a documented referral for a behavior problem prior to the study visit. Attitudes toward potential referrals are shown in table 4. 72% of parents of children who screened positive on the ASQ:SE said they “would welcome” or “would not mind” a referral to a counselor or psychologist. Although 11% “would be very annoyed” by a referral to home visiting, 74% “would welcome” or “would not mind” such a referral. Only 57% “would welcome” or “would not mind” a referral to parenting classes, and 21% reported they “would be very annoyed.”

DISCUSSION

Our findings suggest that one in four low-income preschool aged children screens positive for social-emotional problems on a validated instrument. We found that 27% of parents screened positive for depression, and that depressive symptoms in the parent were strongly associated with a positive screen for social-emotional problems in the child. Our findings also demonstrate suboptimal enrollment in both preventive and early intervention services. Only 64% of parents reported that their children were enrolled in a center-based program. Among children screening positive for social-emotional problems, only 16% of parents reported that the child had been referred previously for behavioral health services. Despite these relatively low numbers, a significant majority of parents indicated receptivity to a referral by the child’s physician to preschool or a counselor or psychologist.

The high prevalence of social-emotional problems in this population confirms the need for a systematic approach to assessment, prevention, and intervention for social-

emotional problems among primary care providers serving low-income children. We were surprised to find that, although the prevalence in our study population was higher than that in the national normative population, the percentage of children scoring above the median was only 55%. Further studies are needed in behavioral trajectories and management of children who do not screen positive but exhibit a number of symptoms suggestive of social-emotional problems.

High quality center-based preschool programs are known to promote healthy social-emotional development.^{16,17} Given the discrepancy between the percentage of parents reporting that their children were enrolled in preschool vs. the percentage of those who reported interest in a referral, our study demonstrates that there is opportunity for the physician to play a role in improving enrollment rates. Furthermore, our study suggests that there may be opportunity for earlier intervention among children with social-emotional problems, as 72% of their parents reported receptivity to a referral to a counselor or psychologist.

We found a significant association between positive screens for social-emotional problems in the child and depressive symptoms in the parent. While this has been shown previously in the literature, it emphasizes the need to consider parental mental health in devising approaches for promoting social-emotional health in a child.^{39,40}

Our study had some limitations. Social desirability bias may have falsely inflated the rates at which parents report that they would be interested in receiving a referral. In addition, the rate of previous referral was obtained by parent report, which may be inaccurate, and by chart review, which only included referrals that were documented by the physician. Despite this limitation, the low referral rate maintains significance, as a referral not remembered by the parent is unlikely to have led to a successful intervention.

CONCLUSIONS

Social-emotional problems, as identified by a validated screening tool, are prevalent in a low-income clinical population. This supports the use of standardized screening in primary care and the development of a systematic approach to addressing positive screens. Pediatric practices should partner with local community behavioral health service providers to optimize the match between need and capacity and to establish clear referral criteria.

In counseling parents about behavior and development, clinicians should be encouraged that most parents would welcome a referral to preschool or behavioral health services. Future research should work to explain and close the gap between the percentage of families who need and want preventive or early intervention services and the percentage of families that are actually enrolled in such programs. To strengthen referral processes to community agencies, a more complete understanding is needed of physician barriers to providing a referral and of families' barriers to follow-up once a desired referral is provided.

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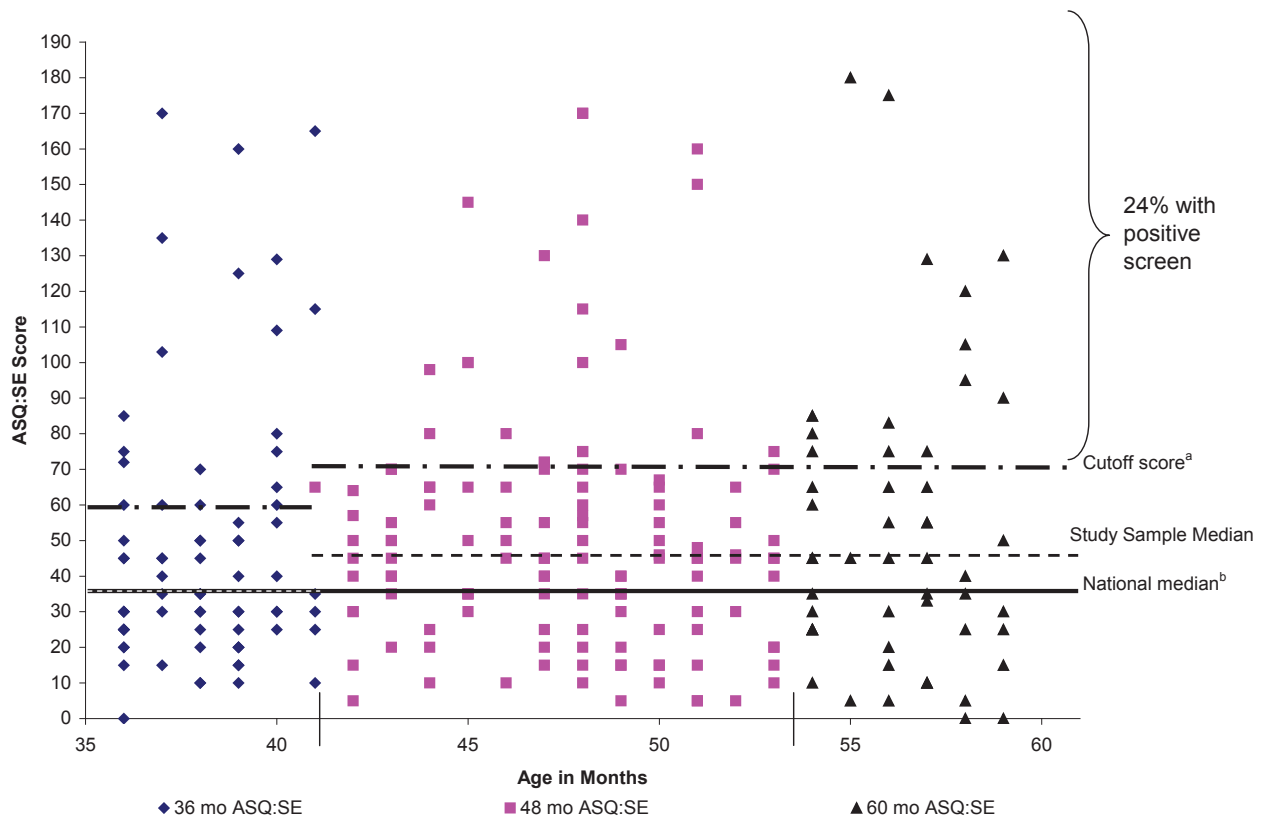
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Table 1. Characteristics of enrolled children (n=254)

Characteristic	n	%
Age of child		
3 years	130	51
4 years	124	49
Gender of child		
Male	122	48
Respondent is primary caregiver?		
Yes	225	95
Respondent relationship to child		
Mother	211	89
Father	14	6
Grandparent	8	3
Other relative/foster parent	3	1
Age of respondent		
18-21	20	9
22-25	77	35
26-35	102	46
>36	22	10
Race of respondent		
White, non-Hispanic	41	18
Black, non-Hispanic	183	78
Hispanic	1	<1
Other (1 Asian, 8 “other”)	9	3
Highest level of education completed by respondent		
<High school	7	3
High school	146	62
College or more	83	35
Insurance status		
Medicaid	230	91
Private	22	9
No insurance	1	<1
Childcare Arrangements ^a		
Head Start	36	28
Other center-based childcare or preschool	46	36
Family childcare home (provider not related to child)	16	13
Care from a relative (in child’s home or relative’s home)	40	31
No non-parental childcare	49	21

^aProportions add up to >100% because some children had >1 childcare arrangement.

Figure 1. Distribution of ASQ:SE Scores



^aCutoff score established by developers of ASQ:SE by ROC curves. Scores above cutoff represent positive screen for social-emotional problems.

^bNational median = median in nationally-representative sample used to norm ASQ:SE

Table 2. Proportion Screening Positive for Social-Emotional Problems on ASQ:SE

	% Positive	p value^a
Child's gender		
Male	31	<0.05
Female	18	
Race		
Black	25	0.35
White	32	
Highest level of education completed by parent/guardian		
High school or less	28	0.09
College or more	18	
Insurance status		
Medicaid	25	<0.05
Private insurance	9	
Positive depression screen in parent/guardian (MHI-5)		
Yes	41	<0.01
No	19	
Age of parent/guardian		
<26 years	28	0.14
26 years or older	19	

^aBased on χ^2 test.

Table 3. Adjusted Odds Ratios of Screening Positive for Social-Emotional Problems on ASQ:SE

	OR (95%CI)^a
Positive depression screen in parent/guardian (MHI-5)	3.1 (1.5-6.3)
Child's gender - male	2.0 (1.0-4.0)
Race - black	0.8 (0.4-1.9)
Parent/guardian completed high school or less	2.1 (1.0-4.6)
Insurance status - Medicaid	3.7 (0.8-17.5)

^aBased on multivariate logistic regression model, adjusted for parental MHI-5, gender, race, parent education, and insurance status

Table 4. Parents' attitudes toward potential referrals when asked, "How do you think you would feel if your child's doctor recommended...."

	"Enrolling in parenting classes"		"Enrolling in a home visiting program"		"Taking your child to a counselor or psychologist"		"Enrolling your child in preschool"	
	n	%	n	%	n	%	n	%
Would welcome the referral	13	24	15	28	25	45	186	85
Would not mind at all	18	33	25	46	19	34	30	14
Would be mildly annoyed	12	22	8	15	9	16	0	0
Would be very annoyed	11	21	6	11	3	5	3	1
Total	54 ^a		54 ^a		56 ^a		219	

^a Results reported only among parents of children who screened positive for social-emotional problem on the ASQ:SE.