# A Pilot Study Comparing Two Developmental Screening Tools for Use With Homeless Children

Sheau-Huey Chiu, PhD, RN, & Marguerite A. DiMarco, PhD, RN, CPNP

## ABSTRACT

Homelessness and poverty can present serious health issues for children, including those associated with developmental delays. Early identification and intervention may decrease risk associated with delayed development. Parent-completed measures have been used to help screen for children's development, but little is known about how they may enhance early detection with homeless children. The primary aims of this pilot study were to describe growth and developmental characteristics of homeless children and to compare a parent-completed measure with professionally-conducted developmental screening results. A prospective, comparative study was conducted with 20 homeless mothers and their 21 children. Health professionals used the Denver Developmental Screening Test II, identifying nine children with possible language delay. Mothers completed the Ages and Stages Questionnaires and identified three areas of concern: fine motor ($n = 9$), communication/language ($n = 4$), and problem solving ($n = 4$). The percentage agreement between these two tools was strongest in gross motor (95%) and personal social development (95%) but weakest in language development (67%). While it is essential for all children, developmental screening is particularly crucial for homeless children because of increased risks related to poverty and homelessness. Nurses and nurse practitioners are in a unique position to assess applicability of such instruments and to provide critically needed interventions for these children. J Pediatr Health Care. (2010) 24, 73-80.

## KEY WORDS

Homeless children, growth and development, developmental screening

Sheau-Huey Chiu, Assistant Professor, Department of Women's, Children's, & Family Nursing, College of Nursing, University of Florida, Gainesville, FL.

Marguerite A. DiMarco, Assistant Professor, College of Nursing, University of Akron, Akron, OH.

Correspondence: Sheau-Huey Chiu, PhD, RN, College of Nursing, University of Florida, HPNP Complex, P.O. Box 100187, Gainesville, FL 32610-0187; e-mail: sheau41@yahoo.com.

The number of homeless persons in the United States has significantly increased, with estimates ranging as high as 3 million. In 2005, homeless families with children accounted for 33% of all homeless (The U.S. Conference of Mayors [U.S. CoM], 2005). According to the National Coalition for the Homeless (2007), the U.S. homeless population consists of 51% single men, 30% families with children, 17% single women, and 2% unaccompanied youth. The largest ethnic group is African American (42%), followed by White (39%). Thirteen percent of homeless people are employed, and families with children are the fastest-growing homeless population (U.S. CoM).

Reducing health disparities among at-risk and underserved populations is a major national health priority (United States Department of Health and Health Services, 2000). One such population, the homeless, face stressful, difficult challenges on a daily basis. The children are particularly vulnerable and are thus at greater risk for developmental delays. The American

Academy of Pediatrics (AAP) (2001, 2006) recognizes the importance of early detection and encourages early identification of developmental delay in children. Early screening and intervention during these children's early years may help reduce health disparities among this population and, consequently, negative long-term effects on the nation's health care and education systems (Centers for Disease Control & Prevention [CDC], 2004).

The aims of this pilot study were to describe growth and developmental characteristics of homeless children ages 4 to 60 months (residing in an urban homeless shelter) and to compare a parent-completed measure with professionally conducted developmental screening results.

## LITERATURE REVIEW

Stressors associated with homelessness and poverty affect the psychosocial and physical well-being of children and their families. Negative outcomes associated with homelessness in children often were reported; these outcomes include physical illnesses, developmental/behavioral problems, depression, fear or trauma from violence, and difficulties with school. For example, Ziesemer, Marcoux, and Marwell (1994) studied homeless and low-income housed school children and found that about three quarters were at increased risk for academic failure or for exhibiting behavioral problems. Davey (1998) studied a group of 52 children from 5 to 11 years of age who resided in a shelter in Florida. These children were found to have increased stress and behavioral problems, as well as lower self-image. Other researchers found that older homeless children had mental and behavioral issues as well (e.g., Ceballo & McLoyd, 2002; Davey & Neff, 2001; Menke, 2000).

> Delays in development often are reported among younger homeless children.

Delays in development often are reported among younger homeless children. Whitman, Accardo, Boyert, and Kendagor (1990) studied 88 children (5 months to 18 years) in a homeless shelter and found that the majority were delayed in language and cognitive development. Wood, Valdez, Hayashi, and Shen (1990) also reported that 17% of homeless parents rated their children's health as fair or poor, and 9% of children had developmental delays. In 1991, findings from a Philadelphia study indicated that homeless children had higher rates of accidents, injuries, and language delay. Specifically, homeless preschooled children, compared with normative samples, scored lower on their receptive vocabulary and visual motor skills (Parker et al., 1991). Eddins (1993) found that 61% of homeless children younger than 5 years old had at least one developmental delay, and 44% exhibited two or more delays. In addition, Grant et al. (2007) reported that slightly more than half of the 3- and 4-year-old homeless preschoolers eligible for special education in their study were diagnosed with developmental delays. In contrast, Garcia, Buckner, Brooks, Weinreb, and Bassuk (1998) found no difference in cognitive and motor development between homeless and low-income housed infants and toddlers. However, they did find that older children who had been exposed to poverty longer had lower scores on developmental assessments.

Effects of homelessness on children's physical growth are less consistent. Miller and Lin (1988) reported a survey ($N = 82$ families with 157 children aged 17 days to 17 years) at a homeless shelter in the Seattle area. They found that slightly more than one third of the children were obese and that 13% were rated by their parents as in fair or poor health. More than half did not have health insurance and utilized emergency rooms at a higher rate than did average children. Wood and colleagues (1990) similarly reported that 13% of the homeless children in their study were overweight, and, in a 2007 study of homeless children 6 to 19 years of age, Grant and colleagues (2007) found an even higher percentage of obesity (about 33%). In an earlier study, Lewis and Meyers (1989) examined the growth and development status of homeless children entering a shelter in Boston. More than 90% of these children were younger than 5 years. The authors found that weight-for-height, weight-for-age, and height-for-age of the sample were similar to those of national samples of low-income children. Fierman and colleagues (1991) compared the growth of homeless children 3 months to 11 years of age with National Center for Health Statistics (NCHS) standards as well as with growth of age-matched children from low-income households. They found homeless children to have significantly shorter stature when compared with housed children and with NCHS standards. Two factors associated with lower-height percentiles were larger families and single mothers. However, duration of homelessness was not associated with decreased height or weight-height among homeless children.

Developmental screening is critically needed to help identify children with developmental problems early in life, particularly for homeless children who are at increased risk for compromised health and safety, as well as learning and developmental delays. According to studies completed a decade ago, an estimated 12% to 16% of children younger than 18 years in the United States have developmental or behavioral disorders (Boyle, Decoufle, & Yeargin-Allsopp, 1994; Boyle et al., 1996). A 2006 report (using 2000 data pertaining to 8-year-old children in Atlanta) showed that although prevalence of developmental disabilities (such as mental retardation) was slightly lower (3% decrease) compared with 1996 data, male and Black children still

had the highest prevalence (Bhasin, Brocksen, Avchen, & Van Naarden Braun, 2006). Sadly, national statistics indicate that only about one third of children with developmental or behavioral problems are recognized as having problems before entering kindergarten (Glascoe & Macias, 2003).

Routine developmental screening of homeless children can be a daunting task because of multiple stressors faced by homeless children and their families. Poverty (Duncan & Brooks-Dunn, 2000), lack of health care access/inconvenience (Riemer, Van Cleve, & Galbraith, 1995), parenting stress (Petterson & Albers, 2001), and ineffective parenting practices (Koblinsky, Morgan, & Anderson, 1997) are associated with negative developmental outcomes in homeless children. Parent-completed screening measures, however, have been used successfully with specific groups of children already flagged as developmentally delayed or as high-risk infants (e.g., extremely premature infants) (Klamer, Lando, Pinborg, & Greisen, 2005; Plomgaard, Hansen, & Greisen, 2006; Skellern, Rogers, & O'Callaghan, 2001). Despite this, homeless children have not been the focus of previous studies, and in a survey of 102 agency directors of homeless shelters, Hicks-Coolick, Burnside-Eaton, and Peters (2003) reported that only 19% of children at shelters received developmental assessment. The transient nature of their lives permits no real continuity of care. Thus, a first step toward identifying these at-risk children is exploration regarding whether a parent-completed developmental measure would yield an accurate assessment in comparison with a professionally conducted developmental screening.

## METHODS

This prospective, comparative pilot study was conducted at the ACCESS shelter located in an urban city in northeast Ohio. A convenience sample of 20 homeless mothers and their children (*n* = 21, 4 to 60 months of age) were recruited. Inclusion criteria for the mothers were as follows: English speaking, aged 18 years or older, residing in the ACCESS shelter, not under the influence of drugs or alcohol during shelter stay, not presently victims of domestic violence, and not directly released from a mental facility. These criteria, required by the ACCESS shelter for admission (DiMarco, 2000, 2007), were in place while the study was conducted. Only mothers whose children were between 4 and 60 months of age were included because of age limits set by a measure used, the Ages and Stages Questionnaires (ASQ) (4 to 60 months). Children who were chronically ill or who had a known history of developmental delay were excluded. To minimize the time commitment from mothers and children, no more than two eligible children per mother were invited to participate. At completion of the study, each mother received $10 cash per child, and each child received a small gift such as book, stuffed animal, or crayons.

## Instruments

The Denver Developmental Screening Test (Denver II) (Frankenburg, Dodds, Archer, Shapiro, & Bresnick, 1992b) is a widely used, readily administered screening tool for early identification of developmental delays in children from birth to 6 years of age. It covers four areas of development: (a) personal/social, (b) fine-motor/adaptive, (c) gross motor, and (d) language development. Delay in a specific area is suspected when a child fails an item that 90% of same-aged children pass. A child receives a "caution" when failing an item that 75% to 90% of same-aged children pass. Each child can receive an overall rating of *normal* ("no delays and a maximum of one caution"), *suspect* ("2 or more cautions and/or 1 or more delays"), or *un-testable* ("if refused one or more items completely to the left of the age line or more than one item intersected by age line in the 75% to 90% area") (Frankenburg et al., 1992a, p. 13). Interrater reliability for the Denver II was between 93.8% and 97.8%. Seven to 10-day test-retest reliability showed 23% of the items were deemed fair to good and 59% excellent (Frankenburg et al., 1992b). Validity was established "by the precision with which the ages corresponding to 25%, 50%, 75%, and 90% passing for each item and subgroup have been determined (Frankenburg et al., 1992b, p. 94)." Construct validity was not performed for the reason that "the Denver II is not a test of some hypothetical construct (e.g., intelligence or physical dexterity), it simply defines the ages at which children accomplish a broad variety of specific tasks (p. 94)."

The ASQ, a parent-completed measure, also was used to measure child development. The ASQ consists of 19 questionnaires for children from 4 to 60 months of age. The ASQ screens for five areas: (a) personal-social, (b) fine motor, (c) gross motor, (d) communication, and (e) problem solving. At the end of each questionnaire, seven additional questions relate to parents' overall perception of and concerns about their children's development. Written at a fourth- to sixth-grade level (Bricker & Squires, 1999), the ASQ is feasible for use in community settings (Rydz et al., 2006). Specific cut-off points for each age were used for identification of children at risk for developmental delay. When compared with standardized tests appropriate for age and tasks (e.g., Bayley Scales of Infant Development, the Revised Gessell Developmental Examination, the Stanford-Binet Intelligence Scale, the McCarthy Scales of Children's Abilities, and the Battelle Developmental Inventory), the sensitivity and specificity of the ASQ is 51% to 92% and 81% to 100%, respectively (Squires, Bricker, & Potter, 1999). Sample items for a 4-month-old from the Denver II and the ASQ are listed in Table 1.

During the assessment, each child's height was measured with a Stadiometer or an infantometer made by Seca (Model 206 bodymeter measuring tape, with wall stop and 210 length measuring mat). Weight was

| Domain | Denver II | ASQ |
|---|---|---|
| **TABLE 1. Selected sample items from Denver II and ASQ for a 4-month-old child** | | |
| Personal-social | Smile spontaneously* | In front of a large mirror, smile or coo at himself or herself |
| | Regard own hands | Watch own hands |
| | Work for toy | While in sitting position, reach for a toy on a table close by, even though his or her hand may not touch it† |
| Language | Make squeal sounds | Make high-pitched squeal sounds |
| | Laugh* | Laugh |
| | OOO/AAH* | Make sound when looking for toys or people |
| Fine motor/adaptive | Follow an object 180° | Follow a toy from side to side in front of him or her |
| | Regard raisin | Sitting position, look at a toy placed on the table or floor in front of him or her |
| | Hand together | Bring hands together over chest, touching fingers‡ |
| | Grasp rattle* | Grab or scratch at his or her clothes |
| Gross motor | Sit up with head steady* | Hold his or her head steady when held in a sitting position |
| | Head up 90°* | On tummy, hold head straight up, looking around |
| | Bear weight on legs | — |

*ASQ, Ages and Stages Questionnaires.*
*\*These skills should be acquired before 4 months of age.*
*†This item is listed under Fine motor category in the ASQ.*
*‡This item is listed under Gross Motor category in the ASQ.*
*Adapted from Bricker, D. & Squires, J. (1999). Ages & Stages Questionnaires® (ASQ): A parent-completed, child-monitoring system. (2nd ed.) Baltimore, MD: Paul H. Brookes; adapted by permission; http://www.brookespublishing.com/store/books/squires-asq/index.htm; and Frankenburg, W. K., Dodds, J., Archer, P., Bresnick, B., Maschka P., Edelman, N., & Shapiro, H. (1992a). The Denver-II: Training manual. Denver, CO: Denver Developmental Materials; adapted with permission.*

obtained from scales made by Health-O-Meter (Model 402 series and 1522KL). Weight-for-height for children younger than 36 months then was calculated. Interpretation of weight-for-height percentile is as follows: underweight, <5%; healthy weight, 5% to <95%; and overweight, ≥95% (CDC, 2008). Body mass index (BMI) for children 2 years and older was calculated using the CDC online BMI calculator for children and teens. BMI-for-age weight status categories and the corresponding percentiles are as follows: underweight, <5%; healthy weight, 5% to 85%; at risk for overweight, 85% to <95%; and overweight, ≥95% (CDC, 2008). For children between 2 and 3 years of age, either BMI or weight-for-height was calculated, depending on how height was obtained. If obtained with a standing scale, then a BMI score would be calculated. If height could only be obtained in a lying-down position, weight-for-height would be calculated. In this study, height for all children 2 years or older was obtained with a standing scale, and their BMI scores were calculated.

## Procedure

The Institutional Review Board approval for the study and a letter of support from the director of the ACCESS shelter were obtained. The shelter has a care clinic that provides well- child care by a pediatric nurse practitioner (PNP) as part of her faculty practice. The Center of Nursing of an urban university, in collaboration with the shelter, provides clinic space as well as services. The ACCESS shelter houses about 40 residents, including single women and mothers with children. Residents are permitted to stay 28 days (DiMarco, 2000, 2007). Subject recruitment and data collection were conducted between April and September 2007. Subject recruitment was completed by the researchers and the coordinator of the clinic, who identified potential subjects and spoke with mothers about their interest in participation. Researchers then approached the mothers who had expressed interest, resided at the shelter, and who brought their child(ren) to the shelter-based clinic for a well-child visits. The researchers explained the study and obtained informed consent. The majority of mothers approached agreed to participate. Those who declined received routine care at the clinic.

Participating mothers completed the following instruments: a Demographic Form and the ASQ, which took approximately 20 minutes to complete (an age-appropriate ASQ questionnaire was used for each child). For children between ages specified by the schedule, the one below and the one above the child's age were administered. During this period, researchers conducted the children's developmental screening using the Denver II. Researchers were certified PNPs who also were certified in using the Denver II. Children's weight and height also were collected when they underwent physical assessment by the PNP. Children found to have developmental concerns by the Denver II or ASQ were referred immediately to an early intervention program.

## RESULTS

A total of 20 mothers and 21 children participated in the study. Two of the children were from the same family. SPSS 15 was used for data analysis. A majority of mothers were African American. The ethnicity reported

## TABLE 2. Maternal and infant demographics

| | Mother (N = 20) | | Child (N = 21) | |
|---|---|---|---|---|
| | n | % | n | % |
| **Race** | | | | |
| Black | 18 | 90 | 20 | 95.2 |
| White | 1 | 5 | 1 | 4.8 |
| Other | 1 | 5 | | |
| **Sex** | | | | |
| Male | | | 8 | 38.1 |
| Female | | | 13 | 61.9 |
| **Marital status** | | | | |
| Never married | 17 | 85 | | |
| Separated | 2 | 10 | | |
| Divorced | 1 | 5 | | |
| **Employment** | | | | |
| Full time | 4 | 20 | | |
| Part time | 2 | 10 | | |
| Unemployed | 12 | 60 | | |
| Student | 2 | 10 | | |
| **Income** | | | | |
| None | 4 | 20 | | |
| Employment | 6 | 30 | | |
| AFDC/TANF | 4 | 20 | | |
| Social security | 2 | 10 | | |
| Other | 4 | 20 | | |
| **Insurance** | | | | |
| None | 2 | 10 | | |
| HMO private | 1 | 5 | | |
| Medicaid | 9 | 45 | | |
| Medicaid HMO | 6 | 30 | | |
| Temporary lost | 2 | 10 | | |

*AFDC/TANF, Aid to Families with Dependent Children/Temporary Assistance for Needy Families; HMO, health maintenance organization.*

## TABLE 3. Denver II and ASQ results (N = 21)

| | Denver II | | ASQ | |
|---|---|---|---|---|
| | Pass | Suspect | Pass | Fail |
| Personal social | 21 | 0 | 20 | 1 |
| Gross motor | 21 | 0 | 20 | 1 |
| Language | 12 | 9 | 17 | 4 |
| Fine motor/adaptive | 20 | 1 | 14 | 7 |
| Problem solving | | | 17 | 4 |

*ASQ, Ages and Stages Questionnaires.*
*Adapted from Bricker, D. & Squires, J. (1999). Ages & Stages Questionnaires® (ASQ): A parent-completed, child-monitoring system. (2nd ed.) Baltimore, MD: Paul H. Brookes; adapted by permission; http://www.brookespublishing.com/store/books/squires-asq/index.htm; and Frankenburg, W. K., Dodds, J., Archer, P., Bresnick, B., Maschka P., Edelman, N., & Shapiro, H. (1992a). The Denver-II: Training manual. Denver, CO: Denver Developmental Materials; adapted with permission.*

was consistent with the shelter's population. The average maternal age was 28.5 years (range: 18 to 45 years), the average maternal education was 11.7 years (range: 10 to 13.5 years), and the average number of times they were homeless was 1.7 (range: 1 to 6). The average age of children was 30.5 months (range: 4 to 58 months). Eight of the children were younger than 2 years. Other demographic information is presented in Table 2.

Information on weight and height was collected from all children. A weight-for-height percentile was calculated for eight children younger than 2 years. One 5-month-old infant was underweight and two (14.5 and 21 months of age) were overweight. BMI was calculated for the remaining 13 children ages 2 years and older. The majority (n = 9, 62.3%) had healthy weights. One child was underweight, two were at risk of becoming overweight, and one was overweight. No children were identified with short stature based on the CDC length-for-age. Overall, 14 of 21 children (67%) had healthy weight, three (14.3%) were overweight, two (9.5%) were at risk for becoming overweight, and two (9.5%) were underweight.

Health care providers used the Denver II instrument to assess children for possible delay. No delay was found in the areas of psychosocial and gross motor development; however, nine of the 21 children (42.9%) received *suspect* results in the area of language development. In contrast, the ASQ revealed three areas of concern identified by mothers: fine motor (n = 7), communication (n = 4), and problem solving (n = 4). The comparison of screening results between health care providers and mothers revealed that three children (14.3%) were identified by both screening tools to be at risk for language/communication delay and one child (4.8%) was at risk for fine-motor delay. Detailed information about Denver II and ASQ results are presented in Table 3. The percentage agreement between these two tools was strongest in gross motor (95%) and personal social development (95%) but weakest in language development (67%) (Table 4).

## DISCUSSION

Early identification of developmental disabilities and early interventions may have a substantial impact on financial, educational, and societal costs in the future. Certainly, children with developmental delays who get early help are in a better position to experience personal benefits, particularly in areas so critical for learning and developing as social beings. Results of this pilot study indicate that homeless children are in need of monitoring for their growth and development. Several findings warrant discussion.

First, health care providers, in conjunction with input from mothers, identified children with different developmental risks. The AAP (2001, 2006) called for use of standardized developmental screening tools and recognized the importance of parental concerns about child development. In our study, the two standardized screening tools helped identify more

| Denver II | | ASQ Fail | ASQ Pass | % |
|---|---|---|---|---|
| | | Personal social | | |
| Personal social | Fail | 0 | 0 | 95 |
| | Pass | 1 | 20 | |
| | | Fine motor | | |
| Fine Motor | Suspect | 1 | 0 | 71 |
| | Pass | 6 | 14 | |
| | | Gross motor | | |
| Gross Motor | Fail | 0 | 0 | 95 |
| | Pass | 1 | 20 | |
| | | Communication | | |
| Language | Suspect | 3 | 6 | 67 |
| | Pass | 1 | 11 | |

*ASQ, Ages and Stages Questionnaires.*
*Adapted from Bricker, D. & Squires, J. (1999). Ages & Stages Questionnaires® (ASQ): A parent-completed, child-monitoring system. (2nd ed.) Baltimore, MD: Paul H. Brookes; adapted by permission; http://www.brookespublishing.com/store/books/squires-asq/index.htm; and Frankenburg, W. K., Dodds, J., Archer, P., Bresnick, B., Maschka P., Edelman, N., & Shapiro, H. (1992a). The Denver-II: Training manual. Denver, CO: Denver Developmental Materials; adapted with permission.*

children who might not have been identified with only one standardized screening tool. For example, mothers reported more children at risk for fine-motor delay, while health care providers identified more children with *suspect* results in the area of language/communication development. Although a possible explanation for this finding may be connected with the fact that mothers had not observed or tried some of these skills with their children, the potential for identifying subtle developmental issues in homeless children by using more than one screening tool cannot be ignored. Practitioners thus will need to keep in mind that additional parental input about children could be useful for identifying subtle developmental delays.

Second, homeless children may be at particular risk for lagging behind in their language development. Whitman et al. (1990) found that in a group of homeless children, language delay was the major developmental issue. Results of this study provide support for these findings. Results from the Denver II screening revealed that about 40% of the children had suspect results in language development. Although mothers in this study identified only four children (19%) with possible language delay, it is important to note these mothers were highly familiar with their children's speech patterns in ways not clear to a stranger. The higher percentage of children identified with suspect language development through the Denver II screening also could reflect that these children were not as talkative with providers as they were with their mothers. Despite dissimilar results, however, language development, particularly among homeless children, remains an important area for health care providers to closely monitor.

Third, overweight issues were present in this sample of children. One out of four were either at risk for becoming overweight or already were overweight. This finding is consistent with findings by Grant et al. (2007), Miller and Lin (1988), and Wood et al. (1990) that 13% to 35% of homeless children were obese. A recent study (Schwarz, Garrett, Hampsey, & Thompson, 2007) from Baltimore also showed a higher rate of homeless children at risk for becoming overweight or already overweight, although children younger than 7 years old were found to have a healthy weight. This was not the case in our study, which showed that a much higher percentage of children younger than 5 years were at risk for becoming overweight or were already overweight.

> In our study, the two standardized screening tools helped identify more children who might not have been identified with only one standardized screening tool.

In our pilot study experience with this population, we found that the ASQ was accepted by homeless mothers and that it is a quick method for initial screening. We also learned that homeless mothers not only expressed interest and concern about their children's development but were open to suggestions about child stimulation and ways to improve development. We did not collect information about children's past growth patterns, caregivers' BMI status, and daily caloric intake of these children, so possible relationships between these data and study findings were not explored. Other study limitations included a small sample size, selection bias, and the cross-section design.

Our findings support the 2001 and 2006 AAP policy statements regarding the importance of developmental screening for monitoring development of young children. Although more studies with larger sample sizes are needed to determine usefulness of parent-completed measures for detecting developmental risks in all children, developmental screening is particularly critical for homeless children because of the stressors created by homelessness and poverty. Health care providers are encouraged to solicit parental input about child development whenever possible. This step is particularly important for nurses and nurse practitioners, who are in a unique position to assess the applicability of such instruments and to provide critically needed interventions for these children.

## REFERENCES

American Academy of Pediatrics. (2001). Developmental surveillance and screening of infants and young children. *Pediatrics, 108*, 192-196.

American Academy of Pediatrics. (2006). Identifying infants and young children with developmental disorders in the medical home: An algorithm for developmental surveillance and screening. *Pediatrics, 118*, 405-420.

Bhasin, T. K., Brocksen, S., Avchen, R. N., & Van Naarden Braun, K. (2006). Prevalence of four developmental disabilities among children aged 8 years: Metropolitan Atlanta Developmental Disabilities Surveillance Program, 1996 and 2000. *MMWR Morbidity & Mortality Weekly Reports, 55*, 105-106, Retrieved December 15, 2008, from http://www.cdc.gov/mmwr/preview/mmwrhtml/ss5501a1.htm.

Boyle, C. A., Decoufle, P., & Yeargin-Allsopp, M. (1994). Prevalence and health impact of developmental disabilities in US children. *Pediatrics, 93*, 399-403.

Boyle, C. A., Yeargin-Allsopp, M., Doernberg, N. S., Holmgreen, P., Murphy, C. C., & Schendel, D. E. (1996). Prevalence of selected developmental disabilities in children 3-10 years of age: Metropolitan Atlanta Developmental Disabilities Surveillance Program, 1991. *MMWR CDC Surveillance Summary, 45*, 1-14, Retrieved December 15, 2008, from http://www.cdc.gov/mmwr/preview/mmwrhtml/00040928.htm.

Bricker, D., & Squires, J. (1999). *Ages & Stages Questionnaires® (ASQ): A parent-completed, child-monitoring system* (2nd ed.). Baltimore, MD: Paul H. Brookes.

Ceballo, R., & McLoyd, V. C. (2002). Social support and parenting in poor, dangerous neighborhoods. *Child Development, 73*, 1310-1321.

Centers for Disease Control & Prevention. (2008). *About the BMI for children and teens.* Retrieved December 15, 2008, from http://www.cdc.gov/nccdphp/dnpa/bmi/childrens_BMI/about_childrens_BMI.htm

Centers for Disease Control & Prevention. (2004). Economic costs associated with mental retardation, cerebral palsy, hearing loss, and vision impairment: United States, 2003. *MMWR, 53*, 57-59, Retrieved December 25, 2008, from http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5303a4.htm.

Davey, T. L. (1998). Homeless children and stress: An empirical study. *Journal of Social Distress and the Homeless, 7*, 29-41.

Davey, T. L., & Neff, J. A. (2001). A shelter-based stress-reduction group intervention targeting self-esteem, social competence, and behavior problems among homeless children. *Journal of Social Distress and the Homeless, 10*, 279-291.

DiMarco, M. A. (2007). *Access/utilization of dental care by homeless children*. Cleveland, OH: Unpublished doctoral dissertation, Case Western Reserve University.

DiMarco, M. A. (2000). Faculty practice at a homeless shelter for women and children. *Holistic Nursing Practice, 14*, 29-37.

Duncan, G. J., & Brooks-Gunn, J. (2000). Family poverty, welfare reform, and child development. *Child Development, 71*, 188-196.

Eddins, E. (1993). Characteristics, health status and service needs of sheltered homeless families. *The Association of Black Nursing Faculty in Higher Education (ABNF) Journal, 4*, 40-44.

Fierman, A. H., Dreyer, B. P., Quinn, L., Shulman, S., Courtlandt, C. D., & Guzzo, R. (1991). Growth delay in homeless children. *Pediatrics, 88*, 918-925.

Frankenburg, W. K., Dodds, J., Archer, P., Bresnick, B., Maschka, P., Edelman, N., & Shapiro, H. (1992a). *The Denver-II: Training manual.* Denver, CO: Denver Developmental Materials.

Frankenburg, W. K., Dodds, J., Archer, P., Shapiro, H., & Bresnick, B. (1992b). The Denver II: A major revision and restandardization of the Denver Developmental Screening Test. *Pediatrics, 89*, 91-97.

Garcia, C. C., Buckner, J. C., Brooks, M. G., Weinreb, L. F., & Bassuk, E. L. (1998). The developmental status and adaptive behavior of homeless and low-income housed infants and toddlers. *American Journal of Public Health, 88*, 1371-1374.

Glascoe, F. P., & Macias, M. M. (2003). Implementing the AAP's new policy on developmental and behavioral screening. *Contemporary Pediatrics, 4*, 85.

Grant, R., Shapiro, A., Joseph, S., Goldsmith, S., Rigual-Lynch, L., & Redlener, I. (2007). The health of homeless children revisited. *Advances in Pediatrics, 54*, 173-187.

Hicks-Coolick, A., Burnside-Eaton, P., & Peters, A. (2003). Homeless children: Needs and services. *Child & Youth Forum, 32*, 197-210.

Klamer, A., Lando, A., Pinborg, A., & Greisen, G. (2005). Ages and Stages Questionnaire used to measure cognitive deficit in children born extremely preterm. *Acta Paediatrica, 94*, 1327-1329.

Koblinsky, S. A., Morgan, K. M., & Anderson, E. A. (1997). African-American homeless and low- income housed mothers: Comparison of parenting practices. *American Journal of Orthopsychiatry, 67*, 37-47.

Lewis, M. R., & Meyers, A. F. (1989). The growth and development status of homeless children entering shelters in Boston. *Public Health Reports, 104*, 247-250.

Menke, E. M. (2000). Comparison of the stressors and coping behaviors of homeless, previously homeless, and never homeless poor children. *Issues Mental Health Nursing, 21*, 691-710.

Miller, D. S., & Lin, E. H. B. (1988). Children in sheltered homeless families: Reported health status and use of health services. *Pediatrics, 81*, 668-673.

National Coalition for the Homeless. (2007). *Who is Homeless?* Retrieved December 9, 2008, from http://www.nationalhomeless.org/publications/facts/Whois.pdf

Parker, R. M., Rescorla, L. A., Finkelstein, J. A., Barnes, N., Holmes, J. H., & Stolley, P. D. (1991). A survey of the health of homeless children in Philadelphia shelters. *American Journal of Diseases of Children, 145*, 520-526.

Petterson, S. M., & Albers, A. B. (2001). Effects of poverty and maternal depression on early child development. *Child Development, 72*, 1794-1813.

Plomgaard, A. M., Hansen, B. M., & Greisen, G. (2006). Measuring developmental deficit in children born at gestational age less than 26 weeks using a parent-completed developmental questionnaire. *Acta Paediatrica, 95*, 1488-1494.

Riemer, J. G., Van Cleve, L., & Galbraith, M. (1995). Barriers to well child care for homeless children under age 13. *Public Health Nursing, 12*, 61-66.

Rydz, D., Srour, M., Oskoui, M., Marget, N., Shiller, M., Birnbaum, R., et al. (2006). Screening for developmental delay in the setting of a community pediatric clinic: A prospective assessment of parent-report questionnaires. *Pediatrics, 118*, e1178-e1186.

Schwarz, K. B., Garrett, B., Hampsey, J., & Thompson, D. (2007). High prevalence of overweight and obesity in homeless Baltimore children and their caregivers: A pilot study. *Medscape General Medicine, 9*, 48.

Skellern, C. Y., Rogers, Y., & O'Callaghan, M. J. (2001). A parent-completed developmental questionnaire: Follow up of ex-premature infants. *Journal of Paediatrics & Child Health, 37*, 125-129.

Squires, J., Bricker, D., & Potter, L. (1999). *The ASQ user's guide for the ages & stages questionnaires: A parent-completed, child-monitoring system* (2nd ed.). Baltimore, MD: Paul H. Brookes.

The United States Conference of Mayors. (2005). *The United States Conference of Mayors-Sodexho, Inc. Hunger and Homelessness Survey 2005.* The United States Conference of Mayors [On-line]. Retrieved December 15, 2008, from http://www.usmayors.org/hungersurvey/2005/HH2005FINAL.pdf

U.S. Department of Health and Human Services. (2000). *Healthy People 2010. With Understanding and Improving Health and Objectives for Improving Health (2nd ed., 2 Vols)*. Washington, DC: U.S. Government Printing Office.

Whitman, B. Y., Accardo, P., Boyert, M., & Kendagor, R. (1990). Homelessness and cognitive performance in children: A possible link. *Social Work, 35*, 516-519.

Wood, D. L., Valdez, R. B., Hayashi, T., & Shen, A. (1990). Health of homeless children and housed, poor children. *Pediatrics, 86*, 858-866.

Ziesemer, C., Marcoux, L., & Marwell, B. E. (1994). Homeless children: Are they different from other low-income children? *Social Work, 39*, 658-668.