

Adaptive Behavior of Sheltered Homeless Children in the French ENFAMS Survey

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Objectives. To describe the adaptive behaviors in a large sample of homeless children and identify factors associated with developmental delay.

Methods. Data were from a cross-sectional survey of 557 children younger than 6 years randomly sampled among homeless sheltered families in the Paris region, France (January–May 2013). An interviewer and a psychologist conducted face-to-face interviews to collect information on sociodemographic and health characteristics. We assessed adaptive behaviors using the Vineland Adaptive Behavior Scales, second edition (VABS-II).

Results. The mean VABS-II composite score (SD) was 75.4 (12.0), and most participating children (80.9%) were considered developmentally delayed. Characteristics negatively associated with children's developmental score were age, birth in a country other than France, low birth weight, and past-year hospitalization.

Conclusions. There is a high prevalence of developmental delays among children growing up homeless.

Public Health Implications. Long-term integrated programs improving parenting and children's opportunities for stimulation and socialization should be developed in daycare centers, schools, shelters, and medical practices to minimize negative effects of early living conditions on children's development. (*Am J Public Health.* 2018;108:503–510. doi: 10.2105/AJPH.2017.304255)

 See also Lynch, p. 434.

Child development is defined as “on-time” growth on the basis of the attainment of specific physical, cognitive, linguistic, social–emotional, and behavioral milestones across specific stages. Numerous factors affect child development, including biological factors (genetics, sex); individual characteristics (overall health, mental health, behavioral disorders); interpersonal relationships (attachment, parenting styles, social networks, neighborhood characteristics); and environmental factors (parental employment and education, socioeconomic status, housing and income).^{1,2} Homeless children are at high risk of poor development at birth (e.g., low birth weight)³ and during the course of development (e.g., experience of material deprivation, social stressors, residential and school mobility, crowding, food insecurity) all of which can affect their physical and emotional health.^{4–6}

Families with children are the fastest-growing homeless population in the United States⁷ and in many European countries,⁸ including France. France has a strong social welfare system with well-functioning safety nets (e.g., universal health insurance, access to the educational system, minimum wage, social benefits for the unemployed). However, housing inequality is increasing rapidly. Real estate prices have grown rapidly—particularly in large cities such as Paris, France—and social

benefits are insufficient to ensure access to stable housing for poor families. In parallel, because of changes in immigration policies, the number of undocumented migrants who are allowed to work and access affordable housing has grown. This situation leads to a high proportion of migrants among families who do not have stable housing and are in contact with social services for the homeless in France. Applying for sheltered accommodation is a complex process, especially for foreign families who are mobile, socially excluded, and often nonfrancophone.^{9,10}

In the Paris region, the number of sheltered homeless families increased and was 5 times greater in 2009 than in 1999.¹¹ However, very few studies^{12–15} have examined the health status of children growing up homeless. Moreover, these studies are not consistent and use different tools to measure developmental delays. For instance, using the Denver Developmental Screening Test,^{16,17} Bassuk and Rosenberg¹² and Wood et al.¹³ found higher levels of developmental delays in homeless children than in low-income housed children and children in the general population. Conversely, using the Bayley Scales of Infant Development,¹⁸ Garcia et al.¹⁴ found that homeless and low-income housed children did not differ in terms of cognitive or motor skills. Similarly, using the Vineland Screener,¹⁹ Huntington et al.¹⁵ did not find any differences between homeless children and children in the general population.

To our knowledge, no study has ever been conducted in France to document

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developmental problems among homeless children. We (1) estimated developmental delay in homeless children aged younger than 6 years in the Paris region, and (2) examined associated environmental and socioeconomic factors.

METHODS

The Observatoire de Samu Social of Paris conducted the ENFAMS survey (the French acronym for ENfants et FAMilles Sans logement personnel, or Homeless Children and Families in English) from January to May 2013 to describe the sociodemographic and health characteristics of homeless families sheltered in emergency centers, long-term rehabilitation centers, social hostels, and centers for asylum seekers in the Paris region.²⁰ In accordance with French National Statistics Institute guidelines, a person was considered to be homeless on a certain day if he or she had spent the previous night in a sheltered accommodation or in a place not intended for living. The eligibility criteria stipulated that for this study, families had to (1) comprise at least 1 parent and at least 1 child aged younger than 13 years, (2) speak 1 of 17 study languages (French, English, Arabic, Armenian, Bulgarian, Mongolian, Romanian, Russian, Tamil, Bambara, Spanish, Italian, Lingala, Portuguese, Serbian, Soninke, or Wolof), and (3) be able to provide informed consent.

Assuming that 10% of children younger than 6 years can experience developmental delay,^{13,14,21,22} it was estimated that 553 participants were needed to reach a precision of 2.5% with a significance level of 5%. The sample consisted of 801 families including 557 children aged younger than 6 years and 244 children aged 6 to 13 years. A time-location sampling design was applied. It was previously used in homeless surveys in France and in the United States.¹⁸ In the first stage, an exhaustive list of all services accommodating homeless families in the Paris region was created.

Emergency shelters are characterized by group accommodations that are short term and provide only basic services (e.g., breakfast). Long-stay hostels (rooms in a collective facility or self-contained flats or hotel rooms) are characterized by stays lasting up to several months and a larger number of services (e.g., access to a kitchen). Asylum seekers are in principle accommodated in special accommodations. However, since the early 2000s,

there has been a shortage of beds in these centers, resulting in asylum seekers being accommodated in inexpensive hotels. Data were collected on the number of the families sheltered and the number of minor children within each homeless service through a telephone survey. In the second stage, families were selected using simple random sampling in each selected service. At the third and final stage, 1 child was randomly selected in each family among all those aged younger than 13 years (simple random sampling). The number of families was estimated in the Ile-de-France region by summing the sampling weights (inverse of the inclusion probability) of all the participants.

In each selected family, data were collected on 1 child and her or his mother because we assumed that she was most able to assess her child. If the mother was absent, the father was interviewed. Bilingual interviewers and psychologists conducted the interviews in the interviewee's bedroom or in a private room provided by the accommodation service.

A nurse took anthropometric measurements, collected data from the child's health booklet, and obtained a capillary blood sample from a finger to determine whether the child had anemia. The adaptive behavior was assessed only in children younger than 6 years.

Definition of the Main Outcome

A psychologist assessed the adaptive behavior in children, using the Vineland Adaptive Behavior Scale, second edition (VABS-II).²³ In addition to the Arabic, Armenian, Bulgarian, Mongolian, Romanian, Russian, and Tamil translations of the Vineland questionnaire, partial or total translations of the questionnaires were carried out orally in Bambara, Lingala, Portuguese, Serbian, Soninke, and Wolof.

The parent was asked about the child's everyday activities across 4 domains (and subdomains): communication (receptive, expressive, and written); daily living skills (personal, domestic, and community); socialization (interpersonal relationships, play and leisure time, and coping skills); and motor skills (gross and fine). For each domain, we converted the sum of raw scores of the corresponding subdomains into an age-based standard score. The composite score was the

sum of the 4 standard scores for each domain. Standard scores (mean = 100; SD = 15) were established for the general population in the United States. Standard scores can be grouped into 5 levels of adaptive functioning: high (130 and higher); moderately high (115–129); adequate (86–114); moderately low (71–85); and low (70 and lower).

Family Sociodemographic and Health Characteristics

The parent provided information on demographic (age, gender, country of birth, migration, and residential trajectories) and socioeconomic characteristics (level of education; income, including benefits; and occupational status) as well as living conditions (housing and homelessness history, social relationships and social support, and understanding of the French language). Family food security was measured using the Household Food Security Scale Measure.^{24,25} The questionnaire for this measure includes 10 adult- and 8 child-referenced questions. Two scores were calculated equaling the total number of affirmative responses to the questions at the household and child levels.

Parental health perception and self-reported health were ascertained using the Minimum European Health Module and the Health Perceptions Questionnaire²⁶ adapted into French for the *Sirs* (Santé, inégalités et ruptures sociales) cohort study^{27,28} and on the basis of health care utilization (in terms of the type and location of health service visits during the previous 12 months).

Parental depression was measured using the World Health Organization short form of the Composite International Diagnostic Interview,^{29,30} posttraumatic stress disorders using the Mini International Neuropsychiatric Interview,³¹ and alcohol abuse and dependence using the World Health Organization Alcohol Use Disorder Identification Test.³² In addition, the parent provided general health data and information on the pregnancy and perinatal history, health care utilization, accidents, and nutrition.

Statistical Analyses

We weighted all the descriptive prevalence rates and proportions inversely to each participant's inclusion probability in accordance with the sampling design. We performed

multiple imputations by chained equations to account for missing data. We weighted imputed data according to the sampling plan to provide population estimates. We fitted simple linear regression models to examine relationships between children's and their families' characteristics and the VABS-II composite score. We used multiple linear regression analyses selecting variables known in the literature to assess relationships between the VABS-II composite score and the characteristics. Absence of multicollinearity is assumed in the model, meaning that the independent variables too highly correlated have been removed (Pearson ≥ 0.6). Statistical analyses were performed using R software 3.2.1 (R Foundation for Statistical Computing, Vienna, Austria).

RESULTS

Children's characteristics are presented in Table 1. Children were aged 2.6 years on average (SD = 1.6); 56.1% were girls, and 27.3% were not born in France. They were homeless for 22.3 months on average (SD = 17.5), and because they were homeless they moved 2.7 times on average (SD = 2.7). The prevalence of preterm births and low birth weight was high. Most of the children (66.3%) experienced food insecurity, 35.2% had anemia, 12.3% had regular medical follow-ups because of an existing health problem, and 18.6% had been hospitalized in the year preceding the interview.

Parents' characteristics are presented in Table 2. Parents were aged 30.8 years on average (SD = 6.2); 95.5% were women, and 92.3% were not born in France. They were homeless for 30.8 months on average (SD = 30.7) and moved 4.3 times on average because they were homeless (SD = 3.9). The mean number of people in the household was 3.2 (SD = 1.1), with a mean of 1.7 children (SD = 0.8); 34.7% of mothers were not in a relationship; 85.0% of parents reported food insecurity; 96.1% of families had an income below the poverty line (828 €/month); and only 14.6% of the parents were employed. The prevalence of psychiatric disorder was high: 29.4% of parents had major depression, 17.5% had a current posttraumatic stress disorder diagnosis, and 9.1% showed signs of alcohol abuse or dependence.

TABLE 1—Children's Characteristics, Unweighted and Weighted Estimations: ENFAMS Survey, Paris, France, 2013

Demographics	Unweighted (n = 557)		Weighted (n = 11 448)	
	% or Mean \pm SD	Missing Data (%)	% or Mean \pm SD	95% CI
Gender				
Male	46.1	0.0	43.9	36.6, 51.2
Female	53.9		56.1	48.9, 63.3
Age				
0–11 mo	25.7	0.0	20.9	15.3, 26.5
12–35 mo	39.9		39.3	33.5, 45.2
36–71 mo	34.5		39.8	32.8, 46.8
Mean, y	2.4 \pm 1.6	0.0	2.6 \pm 1.6	2.4, 2.7
Born abroad	27.7	0.0	27.3	22.1, 32.6
Food insecurity is mild to severe	62.7	0.0	66.3	57.8, 74.9
Homelessness				
No. of moves	2.7 \pm 2.6	0.0	2.7 \pm 2.7	2.5, 3.1
Time homeless, mo	20.9 \pm 17.0	0.2	22.3 \pm 17.5	20.1, 24.6
Birth data				
Born ≥ 3 wk premature	15.1	25.1	14.2	11.0, 17.4
Weight < 2.5 kg at birth	8.6	14.5	8.4	5.6, 11.2
Health data				
Anemia	37.2	12.6	35.2	28.1, 42.2
Medical follow-ups for illness	10.1	0.2	12.3	7.9, 16.8
Hospitalized during previous y	17.2	0.4	18.6	13.1, 24.1

Note. CI = confidence interval; ENFAMS = ENfants et FAMilles Sans logement personnel (Homeless Children and Families).

For all characteristics, the missing data rate was very low. We collected the higher missing data from the child's health booklet and anemia rates.

Vineland Adaptive Behavior Scale-II

The internal consistency of the Vineland questionnaire and each of its domains was high. We computed the Cronbach alphas by age group because some items in the Vineland questionnaire depend on age (in the communication domain, the subdomain written communication begins at age 3 years; in the daily living skills domain, the domestic skills and community skills are intended for children aged 1 year and older; and in the socialization domain, the coping skills subdomain applies only to children aged 1 year and older). The Cronbach alphas for each domain and each age group ranged from 0.61 to 0.97 (Table A, available as a supplement to the online version of this article at <http://www.ajph.org>).

To investigate convergent validity, we computed the Pearson r correlations between

the standard score for each domain and the composite score. The correlations between the different domains ranged from 0.4 to 0.6. The correlations between the composite score and each domain ranged from 0.7 to 0.8.

Adaptive Functioning

The mean VABS-II composite score was 75.4 (SD = 12.0; 95% CI = 74.1, 76.7; Table 3), and 80.9% (95% CI = 71.9, 89.9) of the participating children had moderately low or low adaptive functioning (Table 4). The lowest scores were in the motor skills subdomain (mean = 69.8; SD = 13.5), whereas the highest scores were those in the daily living skills domain (mean = 89.9; SD = 15.8; Table 3). Noticeable and significant differences were found between younger and older children: the children aged 0 to 11 months had higher composite scores (mean = 84.8; SD = 14.0) than did those aged 12 to 35 months (mean = 78.4; SD = 9.5), who, in turn, had higher composite scores than did those aged 36 to 71 months (mean = 67.4; SD = 7.3).

TABLE 2—Parental Characteristics, Unweighted and Weighted Estimations: ENFAMS Survey, Paris, France, 2013

Characteristic	Unweighted (n = 557)		Weighted (n = 7071)	
	% or Mean \pm SD	Missing Data, %	% or Mean \pm SD	95% CI
Demographics				
Gender				
Men	5.0	0.0	4.5	2.3, 6.8
Women	95.0		95.5	87.8, 100.0
Age, y	30.5 \pm 6.0	0.2	30.8 \pm 6.2	30.2, 31.4
Born abroad	93.7	0.0	92.3	84.7, 99.8
Country of birth				
European Union	11.3	0.0	14.1	10.4, 17.8
Sub-Saharan Africa	38.6		37.2	31.2, 43.2
Americas or Oceania	2.0		2.9	0.9, 4.9
Asia	3.8		4.9	2.7, 7.2
Other Africa	19.8		16.5	13.0, 20.0
Other Europe	0.7		0.5	0.0, 1.1
Russian Commonwealth	15.8		13.5	13.0, 20.0
Maghreb	7.5		10.1	7.1, 13.1
Near or Middle East	0.5		0.2	0.0, 0.5
Socioeconomic status				
Education				
None	9.7	0.2	11.6	8.0, 15.3
Primary school	31.4		34.8	29.0, 40.6
Middle school	31.8		27.8	23.3, 32.3
High school, higher, or other	27.1		25.8	21.1, 30.5
Difficulties with French	61.0	0.2	58.3	51.4, 65.3
Occupational category				
Employed	10.8	0.0	14.6	10.1, 19.1
Unemployed	84.0		80.8	74.1, 87.6
Student or retiree	5.2		4.6	2.9, 6.3
Food insecurity is mild to severe	77.4	7.7	85.0	77.5, 92.4
Monthly income per consumption unit, €	273.8 \pm 277.0	2.7	300.6 \pm 300.1	276.0, 339.2
Income < poverty line	97.0	2.7	96.1	88.4, 100.0
Health insurance status				
None	20.5	0.0	21.3	17.4, 25.3
Social Security only	12.8		11.3	8.2, 14.4
Free health care for low-income individuals	64.3		63.8	56.3, 71.3
Social Security + voluntary insurance	2.5		3.6	1.6, 5.5
Family situation				
Relationship status				
Not in relationship	39.5	0.0	34.7	28.0, 41.4
In relationship but living apart	16.0		16.0	12.4, 19.5
Living as couple	44.5		49.3	43.1, 55.6
No. of people in household	3.2 \pm 1.2	0.0	3.2 \pm 1.1	3.1, 3.3
No. of children in household	1.7 \pm 0.9	0.0	1.7 \pm 0.8	1.6, 1.8

Continued

Multivariate Linear Model

Several variables were statistically significantly associated with a lower VABS-II composite score in multivariate analysis (Table B, available as a supplement to the online version of this article at <http://www.ajph.org>). Factors negatively associated were 4 characteristics related to the child—age ($P < .001$), country of birth other than France ($P < .01$), low birth weight ($P < .01$), and past-year hospitalization ($P < .05$)—and 1 parental characteristic: children whose parents had social security and voluntary insurance had lower scores than did those whose parents had no health insurance ($P < .01$). Three parental characteristics were associated with higher VABS-II composite score: those who went to primary school or to middle school ($P < .05$; compared with those who had no education); those who were born in the Russian Commonwealth ($P < .001$; compared with those who were born in European Union); and those who were students or retirees ($P < .05$; compared with those who were employed).

DISCUSSION

The ENFAMS survey revealed a high prevalence of low adaptive functioning among sheltered homeless children in the Paris region, which is commensurate with the frequent and severe food insecurity, high residential mobility, and high rates of parental mental health problems in this highly vulnerable population.^{5,20}

Compared with other European countries and to the United States, France has a high proportion of foreigners among homeless families, and their numbers have recently increased (38% in 2001; 52% in 2012). Yet despite this difference in composition, our results are consistent with previous research. Ziesemer et al.³³ found that about three quarters of homeless and low-income housed schoolchildren were at risk for academic failure or behavioral problems. Zima et al.³⁴ found that 78% of homeless children in Los Angeles County, California, suffer from depression, behavioral difficulties or severe academic delays. Fox et al.³⁵ found that 61% of homeless children had receptive verbal functioning at or below the first percentile for

TABLE 2—Continued

Characteristic	Unweighted (n = 557)		Weighted (n = 7071)	
	% or Mean \pm SD	Missing Data, %	% or Mean \pm SD	95% CI
Homelessness				
Amount of time homeless, mo	28.5 \pm 26.9	0.2	30.8 \pm 30.7	27.0, 34.6
Time lived in France, mo	63.4 \pm 83.2	0.2	77.4 \pm 95.7	67.3, 87.5
No. of moves	4.1 \pm 3.3	1.6	4.3 \pm 3.9	3.8, 4.8
Type of housing				
Center for asylum seekers	19.0	0.0	6.6	5.9, 7.3
Social reintegration center	12.6		9.8	6.8, 12.8
Emergency housing center	12.6		5.7	3.8, 7.6
Social hostel	55.8		78.0	71.1, 84.9
Psychiatric history				
PTSD during lifetime	25.7	1.4	25.0	21.1, 29.0
Current PTSD	17.4	2.3	17.5	14.0, 20.9
Current major depressive episode	28.0	2.0	29.4	23.7, 35.0
Lifetime history of suicide attempt	6.8	1.6	6.7	4.5, 9.0
History of suicide attempt during previous y	2.2	1.6	2.5	0.7, 4.3
Current alcohol abuse or dependence	7.2	3.6	9.1	5.8, 12.5

Note. CI = confidence interval; ENFAMS = ENfants et FAMilles Sans logement personnel (Homeless Children and Families); PTSD = posttraumatic stress disorder. Data were collected from the interviewed parent (the mother unless she was absent).

age, 29% were functioning at the fifth percentile for age in psychomotor ability, and 38% exhibited emotional and behavioral problems. Delays in development are reported among younger homeless children.³⁶ Eddins³⁷ found that 61% of homeless children aged younger than 5 years had at least 1 developmental delay. Whitman et al.³⁸ found that a majority of children in a shelter were delayed in language and cognitive development.

Developmental delays can be assessed by different tools that may partially explain

differences of prevalence rates across studies: Bassuk and Rosenberg,¹² using the Denver Developmental Screening Test, found that 54% of homeless preschoolers had at least 1 major developmental delay compared with 16% of low-income housed preschoolers. Wood et al.,¹³ also using the Denver Developmental Screening Test, found that 9% of children had a developmental delay, at least 50% more than expected in the general population.

Conversely, Garcia et al.,¹⁴ using the Bayley Scales of Infant Development, did

not find any differences between homeless, low-income housed infants and toddlers and the general population. However, they used an older version of the Bayley Scales, and it is very likely that the results would not be as good if they had administered the revised version.

Furthermore, identification of the developmental delay may be influenced by the individual conducting the developmental screening (either the parent or a professional). Chiu and DiMarco³⁶ found that mothers reported more children at risk for fine motor delay, whereas health care providers identified more children with delays in the area of language or communication. Overall, developmental screening is particularly sensitive for homeless children because of the stressors created by living conditions and poverty (i.e., the fear that children may be placed).

Our results highlight especially vulnerable subgroups in this extremely underserved group with regard to adaptive behavior, such as parents with a low level of education. Low parental education is a social risk factor known to be consistently among the strongest correlates of poor cognitive and developmental outcomes among children and remains a strong factor in our population, suggesting a continuum in the social risk factor among the whole population.³⁹

Another factor most associated with the children's VABS-II composite score was their age. The considerable difference between younger and older children in communication, social, daily living, and motor skills scores is consistent with the findings of earlier studies.^{14,40} The decrease in scores with age may be attributable to the cumulative effect of

TABLE 3—Standard Scores of VABS-II by Age Group, Unweighted and Weighted Estimations: ENFAMS Survey, Paris, France, 2013

Standard Scores	Aged 0–71 Mo, Unweighted (n = 557)	Aged 0–71 Mo, Weighted (n = 11 448)		Aged 0–11 Mo, Weighted (n = 2389)		Aged 12–35 Mo, Weighted (n = 4504)		Aged 36–71 Mo, Weighted (n = 4555)	
	Mean \pm SD	Mean \pm SD	95% CI	Mean \pm SD	95% CI	Mean \pm SD	95% CI	Mean \pm SD	95% CI
Communication	75.6 \pm 16.3	74.7 \pm 16.6	72.5, 76.9	89.1 \pm 21.6	82.6, 95.6	75.1 \pm 12.7	73.0, 77.2	66.7 \pm 10.6	64.9, 68.4
Daily Living	90.7 \pm 16.8	89.9 \pm 15.8	88.2, 91.7	92.2 \pm 17.2	87.7, 96.6	96.7 \pm 14.4	94.4, 98.9	82.1 \pm 12.6	80.0, 84.3
Social	80.0 \pm 13.6	78.7 \pm 11.9	77.4, 80.0	85.2 \pm 14.8	82.0, 88.4	81.9 \pm 10.1	80.3, 83.6	72.1 \pm 7.9	70.7, 73.5
Motor	72.5 \pm 16.0	69.8 \pm 13.5	68.5, 71.0	81.4 \pm 17.5	76.6, 86.2	71.8 \pm 10.6	70.1, 73.6	61.7 \pm 6.7	60.4, 63.1
Composite	77.0 \pm 13.5	75.4 \pm 12.0	74.1, 76.7	84.8 \pm 14.0	81.6, 88.1	78.4 \pm 9.5	76.9, 80.0	67.4 \pm 7.3	66.2, 68.6

Note. CI = confidence interval; ENFAMS = ENfants et FAMilles Sans logement personnel (Homeless Children and Families); VABS-II = Vineland Adaptive Behavior Scales, second edition.

TABLE 4—Levels of Adaptive Functioning by Age Group, Unweighted and Weighted Estimations: ENFAMS Survey, Paris, France, 2013

Developmental Status	Aged 0–71 Mo, Unweighted (n = 557), %	Aged 0–71 Mo, Weighted (n = 11 448), % (95% CI)	Aged 0–11 Mo, Weighted (n = 2389), % (95% CI)	Aged 12–35 Mo, Weighted (n = 4504), % (95% CI)	Aged 36–71 Mo, Weighted (n = 4555), % (95% CI)
Low	37.7	41.4 (34.2, 48.6)	16.1 (6.5, 25.7)	22.8 (16.1, 29.5)	73.0 (58.2, 87.9)
Moderately low	40.0	39.5 (32.9, 46.1)	36.1 (18.1, 54.1)	55.3 (42.8, 67.7)	25.7 (18.3, 33.0)
Adequate	20.5	18.5 (13.4, 23.6)	45.5 (25.4, 65.7)	21.5 (14.1, 29.0)	1.3 (0.0, 3.1)
Moderately high	1.6	0.6 (0.2, 1.0)	2.3 (0.4, 4.3)	0.3 (0.0, 0.8)	0.0 (0.0, 0.0)
High	0.2	0.1 (0.0, 0.1)	0.0 (0.0, 0.0)	0.1 (0.0, 0.4)	0.0 (0.0, 0.0)

Note. CI = confidence interval; ENFAMS = ENfants et FAMilles Sans logement personnel (Homeless Children and Families).

a high-risk environment and the need for greater cognitive and verbal stimulation with age. Garcia et al.¹⁴ and Bassuk and Rosenberg¹² also found that older children who had been exposed to poverty longer had lower scores in developmental assessments. Poverty, lack of health care access, parenting stress, and inadequate parenting practices are known to be associated with poor developmental outcomes in homeless children,^{41–44} suggesting cumulative effects.

Other exacerbating factors were birth abroad and low birth weight. Immigrant children may be more likely than are children with native-born parents to face a variety of circumstances, such as low family income, low parental education, and language barriers that place them at risk for developmental delay. Low birth weight is one of the known factors that can lead to a poor prognosis of functioning. The impact of homelessness begins before birth, and most homeless mothers face numerous obstacles to a healthy pregnancy, such as chronic and acute health problems and a lack of prenatal care; their children are more likely to have a low birth weight and are at greater risk for death.³

Limitations

One limitation of our study is that, because there was no comparison group of children from low-income housed families, homelessness-specific effects cannot be distinguished from the broader impact of poverty.²² Our use of the VABS–II in vulnerable and multicultural populations is also a limitation. Another limitation is the multicultural aspect of the study. American studies are not as multicultural as is our study, which was

conducted in 17 languages. Context and culture can influence normal development and promote or hinder it. Furthermore, development stages can vary over time in a significant way within and across ethnic and cultural groups.¹ It is nevertheless necessary to qualify these results because, with the exception of physical or mental illnesses, the delays in a child's adaptive behavior do not necessarily predict future development delays.^{1,45}

Public Health Implications

As the number of homeless families has grown over time in France, as well as in many other European countries, public policies should address both the social and health needs of this particularly vulnerable population. Homeless children accumulate multiple risk factors such as difficult pregnancies and birth complications, health difficulties, food insecurity, parental mental health problems, poor nutrition, and residential instability. In this context, improving housing conditions could improve children's health, which should be reduced by collaborative interventions between social and health services. Housing stability may also facilitate children's and parents' access to specific health care and educational programs.

Even if developmental delays are common, they are often underdiagnosed and left untreated: Zima et al.³⁴ found that among children with developmental problem, only one third of parents were aware of it, and few of those children (15%) received mental health care or special education. Practitioners and school services should use developmental assessment to identify the specific needs of

homeless children and to promote early interventions to reduce the long-term impact on their future life. Some studies show the effectiveness of interventions designed to develop children's psychosocial skills and parental abilities.⁴⁶ They focused on parents' and children's stress and anger management, relationships with peers, and development of good mother–children interactions that greatly benefit the developmental growth of disadvantaged children, including those who are homeless.

Our findings support the 2001 and 2006 American Academy of Pediatrics policy statements regarding the importance of developmental screening to monitor the development of young children. Primary care services are easier to access in ambulatory settings than in public hospitals; therefore, medical personnel in ambulatory settings should be encouraged to carry out this developmental screening. Some primary care providers are not familiar with the specific concerns of children growing up in homeless families, and they should receive training to gain better knowledge of resources that they can use to address the needs of this high-risk population (e.g., access to translation services, social services, and mental health professionals). Pediatricians, primary care physicians, and emergency doctors should be aware of social risk factors that can have additive effects on cognitive delay in infancy, especially in this high-risk group. They should become familiar with government and community-based services that assist families with unmet social and economic needs, as recommended by the American Academy of Pediatrics.

Homeless children are more likely to experience major developmental delays, because they are overexposed to multiple risk factors and receive fewer services than do children in the general population. Long-term integrated programs improving parenting and children's opportunities for stimulation and socialization should be developed in daycare centers, schools, shelters, and medical practices to minimize the negative impact of risk factors on children's development. **AJPH**

CONTRIBUTORS

S. Darbada, M. Orri, and C. Barry analyzed and interpreted the data. S. Darbada and S. Vandentorren wrote the first draft of the article. B. Falissard, M. Orri, C. Barry, M. Melchior, and P. Chauvin revised the article critically for important intellectual content. B. Falissard and S. Vandentorren participated in study design. All authors approved the final draft of the article.

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HUMAN PARTICIPANT PROTECTION

The study protocol was approved by the national authority for the protection of personal data collected on individuals, Commission Nationale de l'Informatique et des Libertés (DR-2013-147) and by 2 ethics committees, Comité de Protection des Personnes (Ref 2012 02 06, 22/08/2012) and Comité consultatif sur le traitement de l'information en matière de recherche dans le domaine de la santé (12.471, September 17, 2012).

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