

# Characteristics and health of homeless families: the ENFAMS survey in the Paris region, France 2013

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**Background:** The objectives were to estimate the size of homeless family population in Paris region, to describe their living conditions and health and to analyse the impact of homelessness on children's growth and development, which was never investigated in France. **Methods:** A cross-sectional survey was conducted on a random sample of homeless sheltered families in 2013. Families were interviewed in 17 languages and a nurse took anthropometric measures, blood samples and collected health data from child health reports. **Results:** The population size was estimated at 10 280 families. Half were single-parent female families and 94% were born outside France. Most families had experienced housing instability and 94% were living below the poverty line (828 euros/month). Malnutrition was a major problem: the prevalence of food insecurity was high (77% of parents and 69% of children), as well as anaemia (50% of mothers and 38% of children), overweight (38% of mothers and 22% of children) and obesity (32% of mothers and 4% of children). High rates of depressive disorders were found in 30% of homeless mothers and 20% of children had signs of possible mental health disorders. **Discussion:** These first results highlight the important number of families among the homeless population in Paris region. Families differed from other homeless people regarding social characteristics such as birthplace, single-parent status and residential instability that are likely to influence schooling, social ties, health and access to care. These results demonstrate the need for urgent actions targeting homeless families, in terms of reducing housing instability and providing adequate care, especially for children.

## Background

Studies in the USA and the EU highlight that homelessness damages the health of homeless people.<sup>1</sup> However, the impacts of living conditions on health are different according to the homeless populations. It seems important therefore to study the specific characteristics of subgroups among the homeless population, e.g. single people and families.<sup>2</sup> Homelessness threatens children's health and development<sup>3,4</sup>; homeless children are twice as likely to experience hunger and four times more likely to have developmental delays than other children.<sup>5</sup> Moreover, some studies found that even after rehousing, homeless families have been found to suffer from high levels of mental disorders and children to display a poorer health status compared with their housed counterparts.<sup>6–8</sup>

Families represent the fastest growing segment in the homeless population, especially in metropolitan areas in France and other European countries, which dates back to the end-90s<sup>9</sup> as in the USA to the mid-80s.<sup>7</sup> In 2012, the number of homeless people living in France was estimated at 141 500, including people who do not speak French. From 2001 to 2012, this number increased by 50%.<sup>10</sup> Among them, 66 300 French-speaking adults lived in cities with more than 20 000 inhabitants, 20% lived in a couple and 26% lived with children.<sup>11</sup> Other studies showed a sustainable growth of mostly migrant homeless families in temporary accommodations,

since the late 90s. Thus, family homelessness results of an intricate combination of social and migration policies, which highlights the need to re-evaluate the question of migrants and care.<sup>12</sup> In 2010, the homeless hotline in Paris sheltered more families than individuals: more than 11 000 parents and children were accommodated, corresponding to a 300% increase in 10 years.<sup>10</sup>

In this context, the Observatoire du Samusocial de Paris conducted the ENFAMS survey (Enfants et familles sans logement) among homeless children and families in 2013. The objectives of this study were to estimate the size of this population in the Paris region, to describe their socio-demographic characteristics and to evaluate their health status and needs. Specific focus was placed on mental health, nutrition (especially food insecurity and anaemia), child development and access to health care for parents and children.

## Study population

The ENFAMS survey was based on a random sample of 801 families provided with accommodation in emergency centres, long-term rehabilitation centres, social hotels and centres for asylum seekers. The study area included Paris and its region, covering a total population of 12 million people living in the so-called Ile de France region. An eligible family was defined as comprising at least one parent (>18-year old) with at least one child younger than 13 years,

speaking one of the 17 languages of the survey and able to provide written consent to participate.

In each family, we interviewed the mother (or the father if the mother was absent) and one child younger than 13 years (566 children younger than 6 years and 235 children aged 6–12 years). Assuming that 10% of children aged  $\leq 5$  years may suffer from developmental delay,<sup>13</sup> we calculated that 553 such participants needed to reach a precision of 2.5% with a significance level of 5%.

### **Sampling process**

We used a time-location sampling design previously used in homeless surveys in France and in the USA.<sup>14,15</sup>

In the first stage, we created an exhaustive list of all services included in the study accommodating homeless families in the Paris region. We collected data on the number of the families sheltered and the number of minor children within each homeless service through a telephone survey. The type of the service, its distance from Paris and its distance from the nearest train/metro station were taken into account in stratifying the sampling frame into 36 strata. These covered four types of service, three distances from Paris and three distances from the nearest station. We deliberately oversampled the farthest transport zone and the longest distance to a train station since the daily mobility and the geographic accessibility of care services are a central issue for homeless families. Emergency shelters were also oversampled; all asylum centres were included and hotels—the main accommodation for families—were undersampled.

In the second stage, families were selected using simple random sampling in each selected service. At the third and final stage, one child was randomly chosen in each family among all those younger than 13 years (simple random sampling). The total number of children housed was collected to perform unequal random sampling as follows: in each of the 36 strata, services were selected with a probability proportional to the expected number of children staying in each of them.

### **Data collection**

The interviews with families were conducted in three steps. A few days before the beginning of the interviews, a preparatory visit took place in the selected homeless care services. Families were sampled and the study was presented to them. If the parent(s) agreed to participate, we made an appointment, so that they could be surveyed over the following days by a two-member team, comprising a bi-lingual interviewer and a psychologist.

After obtaining written consent, the interviewer administered two face-to-face questionnaires to one of the parents. The first parent questionnaire collected demographic (age, gender, country of birth, migration and residential trajectories) and socio-economic data (level of diplomas, financial support, occupational status, professional experiences, housing history since the first episode of homelessness and number of accommodation moves since most recent episode of homelessness started, social relationships and social support, understanding of the French language). It also focused on health perceptions and self-reported health using the Health Perceptions Questionnaire<sup>16</sup> from the SIRS cohort study<sup>17,18</sup> and health care utilization (type and locations of health services visited). It collected data on perinatal health (for women with children younger than 1 year), using questions from the French national perinatal surveys<sup>19</sup> and assessed food security using the Household Food Security Survey Measure.<sup>20,21</sup> It also focused on mental health using the World Health Organization CIDI-S<sup>22,23</sup> to measure depression and the MINI-S<sup>24</sup> to assess post-traumatic stress disorders among parents.

The second face-to-face questionnaire collected data on the child's respiratory health, diet, sleep patterns, physical activity, health care utilization with additional questions about school and social

relationships for children aged 6 years or older. For children aged more than 6 years, a face-to-face questionnaire was directly administered to the child to collect data on social relationships at home, in the neighbourhood and at school.

The psychologist carried out two different psychometric tests on children, depending on their age. Psychomotor development was assessed in children aged  $\leq 5$  years using the Vineland test (Vineland Social Maturity Scale).<sup>25</sup> We chose to use this test after a systematic review of the literature to avoid a possible clinically inaccurate conclusion on delayed development in the context of young children and homelessness. More specifically, we wanted to focus on global development rather than on specific psychological dimensions. The mental health disorders (among children aged 4 years or more) were assessed by administering the Strength and Difficulties Questionnaire (SDQ). Finally, the 'Dominic Interactive', a self-reported measure for children, was used to assess common mental health disorders in children aged 6 years or more.<sup>26</sup>

The third step comprised medical data collection (vaccination, growth) by nurses using the child's health records and anthropometric measures, as well as biological samples to be used to determine the child's nutritional status and possible environmental exposure. Nurses collected finger prick blood stains on sample cards from children to perform capillary blood measures for vitamins A and D.<sup>27</sup> They immediately measured haemoglobin concentrations with the HemoCue system. Nurses also measured children's weight (with a calibrated SECA balance scale) and height (with either a sliding foot scale or a wall-mounted stadiometer, depending on age). Overweightness and obesity were then estimated in children aged 2 years or more, in accordance with the IOTF age- and sex-specific child body mass index cut-off points.<sup>28</sup>

### **Statistics**

The estimated number of families in the Ile-de-France region was obtained by summing the sampling weights (inverse of the inclusion probability) of all the participants. Chi-square tests were used to study the factors associated with participation. Statistics were performed using Stata12 software (StataCorp, TX).

## **Results**

### **Rate participation and population size**

We registered 796 accommodation services in Paris region of which social hotels represented 73%, while long-term rehabilitation centres, emergency shelters and asylum centres represented, respectively, 16%, 6% and 5%. Among the 796 services, 251 were sampled, 237 contacted and 193 finally visited. The service participation rate was 81%: a higher proportion of social hotels agreed to participate (89%), while long-term rehabilitation centres were less willing (64%).

We sampled 801 homeless families. Family participation rate was 79% (Figure 1). Among the 258 families refusing to take part in the survey, the following reasons were most frequently cited: lack of interest (17%) and lack of time (14%). Non-participants were younger (mean age: 33 vs. 38 years); men accounted for a larger percentage of the non-participant group (15.3% of all those who refused vs. 4.6% of those who accepted). Furthermore, non-participants had more than two children under care more frequently than participants (31.7% vs. 23.1%)

In the Paris region, the number of sheltered families was estimated at 10 280 [95% confidence interval (CI): 9507–11 053], which corresponds to an estimated 35 000 (95% CI: 32 184–37 763) individuals with 17 660 (95% CI: 16 265–19 057) children younger than 12 years.

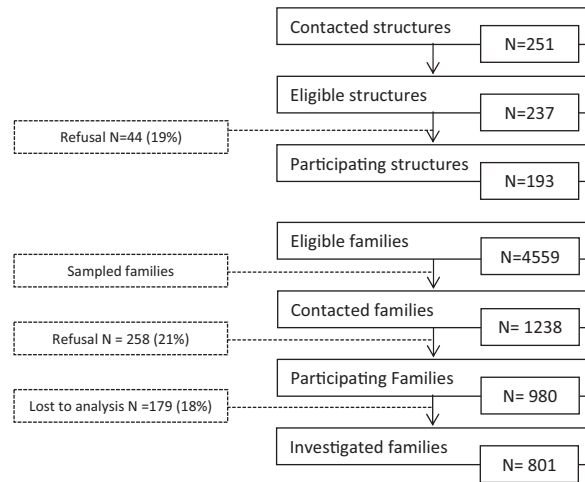


Figure 1 Flow chart

### Sociodemographic characteristics

Characteristics of homeless parents are summarized in table 1. Parents had a mean age of 32.6 years, half were single female families and 21.8% had more than three children to care after. Children were on average 5.4 years old and 57.3% were born in France. Most of parents were migrants: 93.9% were born outside of France with 34.9% born in Sub-Saharan Africa and 17.1% in the Commonwealth of Independent States. The reasons for migration were mainly political for people from Eastern European countries and economical or family-based for those from the African continent. On average, they had lived in France for 5 years. Upon their arrival, most had no home: 30% were sheltered.

Before being homeless, 47.1% of families lived at a friend's house and 17.8% of families spend at least one night in the street. Living conditions were marked by residential instability; with more frequent moves over the first years (families sheltered for 1–2 years had moved 3.8 times a year on average, while those homeless for 2–4 years had moved 1.9 times a year). Even after having been accommodated, 15.2% spent at least one night on the street.

When questioned about their educational level, 37.0% stated that they did not have any diplomas whatsoever while 15.1% had some tertiary education. More than half of the parents: 63.3% of parents born out of France declared that they found it difficult to understand, speak, read or write French. When asked about employment, only 19.2% stated that they were working, with or without a contract. The majority of families were living under the poverty line (828 euros/month): 93.6% (95% CI: 90.7–95.6). Average income was about 307 euros per month and many families were in a difficult socio-economic situation: 21.9% (95% CI: 18.2–26.1) reported having no income (including no social welfare). More than one third had an uncertain administrative status (under regularization process): 46.1 (95% CI: 40.8–51.4). Twenty percent: 20.4% (95% CI: 16.9–24.5) did not have any health insurance and 58.0% (95% CI: 53.1–62.9) reported that they did not have any supplementary health insurance.

### Prevalence of health disorders

Parents suffered from a high prevalence of health troubles, children also being affected (table 2). Malnutrition and mental health were the major concerns. Food insecurity affected 77.0% (95% CI: 72.9–80.7) of parents and 60.7% (95% CI: 56.1–65.1) of children. Approximately half of the families suffered from anaemia [50.3% of mothers (95% CI: 45.8–54.8) and 37.7% (95% CI: 32.5–43.2) of children]. Overweight and obesity affected a high proportion of families: 38.2% (95% CI: 33.3–43.1) of the mothers were overweight and 31.7% (95% CI: 26.7–36.6) were obese, while these

Table 1 Characteristics of homeless parents

Characteristics of homeless parents	Percentage (N = 801)	95% CI
<b>Demographics</b>		
Gender		
Men	3.9%	[2.2–5.5]
Women	96.1%	[94.5–97.8] <sup>a</sup>
Age		
Mean	32.6	[31.7–33.0]
Range	17–57	
Country of birth		
Sub-Saharan Africa	34.9%	[30.4–39.7]
Commonwealth of independent states	17.1%	[14.3–20.4]
Non Sub-Saharan Africa	15.7%	[12.4–19.5]
European Union	13.7%	[10.7–17.4]
Maghreb	11.9%	[8.5–16.5]
Asia	4.0%	[2.4–6.7]
Other	2.6%	[1.0–6.6]
<b>Socioeconomic status</b>		
Level of diplomas		
Tertiary	15.1%	[12.1–18.7]
Secondary	19.1%	[15.8–22.8]
Primary	27.4%	[22.7–32.6]
None	37.0%	[32.8–41.4]
Other	1.5%	[0.7–1.3]
Language		
Difficulties with French <sup>b</sup>	63.3%	[57.6–68.6]
Occupational category		
Employed	19.2%	[15.3–23.8]
Unemployed	76.8%	[71.9–81.0]
Students, retirees	3.8%	[2.3–6.2]
Monthly income per consumption unit (euros)		
Mean	306.9	[274.5–339.3]
Health insurance status		
Social security + voluntary insurance	41.1%	[36.2–46.3]
Free health care for low-income individuals	27.9%	[23.7–32.4]
Social security only	10.6%	[7.2–15.2]
None	20.4%	[16.9–24.5]
<b>Family situation</b>		
Relationship status		
Living in a couple	48.7%	[43.0–54.5]
In a couple but not living together	12.5%	[9.1–16.9]
Not living in a couple	38.8%	[33.3–44.5]
Number of children		
Three children or more	21.8	[17.5–26.1]
<b>Homelessness</b>		
Period of homelessness		
Being homeless for more than 2 years	51.5%	[47.1–55.7]
Number of moves		
Mean (move/year)	2.2	[1.9–2.4]
Type of housing		
Social hotel	75.7%	[72.8–78.4]
Emergency housing centres	4.3%	[3.0–6.1]
Centres for asylum-seekers	6.2%	[5.6–6.8]
Social reinsertion centres	13.8%	[11.4–16.7]
Number of moves to new housing		
Mean	4.3	[3.9–4.8]
Range	0–25	

a: We preferentially selected women in our study (assuming they were more competent to answer questions about young children).

b: Only for 760 parents born out of France.

rates reached, respectively, 21.6% (95% CI: 15.2–28.1) and 4% (95% CI: 1.7–6.3) in children aged  $\geq 2$  years. Mental health was also a major issue: 27.1% (95% CI: 23.4–30.8) of homeless mothers experienced high rates of depressive disorders and 19.7% (95% CI: 14.1–25.2) had suffered from post-traumatic stress disorders (MINI-S) since the last 12 months. According to the different SDQ subscales, 20.8% (95% CI: 15.8–25.8) of children were suspected of having emotional and behavioural difficulties, whereas 3.4% (95% CI: 1.0–5.9) self-reported mental health disorder (Dominic Interactive). A majority of children: 80.8% (95% CI: 71.8–89.8) had developmental delays (Vineland). We

**Table 2. Health characteristics**

Health characteristics	Tools*	Missing values (%)	Proportions (%) [95% CI]	Proportions (%) in the general population
<b>Adults</b>				
Food insecurity	US HFSSM	3.6	77.0 [65.3–90.1]	6.3 <sup>a</sup>
Anaemia (mothers only)	HemoCue	3.7	50.3 [45.8–54.8]	9.1 [7.9–10.4] <sup>b</sup>
Non-pregnant mother weight status				
Overweight (non-pregnant mothers)	BMI	15.0	38.2 [33.3–43.1]	26.3 <sup>c</sup>
Obesity (non-pregnant mothers)	BMI	15.0	31.7 [26.7–36.6]	15.7 <sup>c</sup>
Depression	CIDI	3.9	27.1 [23.4–30.8]	10.4 [8.4–12.4] <sup>a</sup>
Post-traumatic stress disorders	MINI	5.3	19.7 [14.1–25.2]	[1–10] <sup>d</sup>
<b>Children</b>				
Food insecurity	US HFSSM		60.7 [56.1–65.1]	?
Anaemia (1–12 years old)	HemoCue	5.0	37.7 [32.5–43.2]	8.3 [1.8–30.5] <sup>e</sup>
Overweight (2–12 years old)	BMI	3.4	21.6 [15.2–28.1]	11.6 <sup>f</sup>
Obesity (2–12 years old)	BMI	3.4	4.0 [1.7–6.3]	2.9 <sup>f</sup>
Mental Health Problems (4–12 years old)	SDQ	1.2	20.8 [15.8–25.8]	8.0 <sup>g</sup>
Self-reported mental health disorders	Dominic	13.1	3.4 [1.0–5.9]	
Developmental delay	Vineland	0	80.8 [71.8–89.8]	?

\*The Enfams survey report (Guyavarch E, LeMener E, Vandentorren S (dir) ) is available on line <http://www.samusocial.paris/enfams-enfants-et-familles-sans-logement-en-ile-de-france>

a: From the SIRS survey among the general population in the same Ile de France region (with US HFSSM) in 2010.

b: From the Worldwide prevalence of anaemia WHO Global Database on Anaemia among women, 1993–2005.

c: From the ObEpi survey among women  $n > 18$  years in France in 2012 ([http://www.roche.fr/content/dam/corporate/roche\\_fr/doc/obepi\\_2012.pdf](http://www.roche.fr/content/dam/corporate/roche_fr/doc/obepi_2012.pdf)).

d: From Ref. 32.

e: From the Worldwide prevalence of anaemia 1993–2005 of WHO Global Database on Anaemia among children aged 0–5 years.

f: From the INCA2 survey among children aged 3–17 years in France in 2006–07.

g: From the study 'The strengths and difficulties questionnaire: validation study in French school-aged children and cross-cultural comparisons'.

noted that 73.0% (95% CI: 67.1–78.9) of adults and 66.9% (95% CI: 60.4–73.5) of children who had been homeless for more than 2 years suffered from food insecurity whereas they were, respectively, 81.3% (95% CI: 76.4–86.1) and 76.5% (95% CI: 71.2–81.9) when the homeless duration was lower than 2 years ( $P = 0.0002$ ). Conversely, health indicators in mothers and children seemed to worsen with time spent in 'homeless conditions', in particular regarding overweight, though the results were only borderline significant (data not shown).

## Discussion

Our results describe for the first time an under-investigated population in France: homeless families. Consistently with the previous studies in homeless families in the USA,<sup>2,29,30</sup> the characteristics of those living in homeless families were very different from those of other homeless. Most of the homeless families investigated in our study included were single mother with children, migrant and having a very low income (if any). They were sheltered in social hotels with few comforts and conveniences and most of them had experienced housing instability. These living conditions may have had a dramatic impact on their health in terms of food insecurity, anaemia, overweightness and obesity. Furthermore, mental health problems reached much higher levels than in the general population. These results are consistent with the Samenta survey, led in Paris area in 2009.<sup>31</sup> Thus, these prevalences were higher than in general population (table 2). Previous studies on food insecurity found 6.3% of general population in the region of Paris<sup>21</sup> and 31.9% in population benefiting of food aid.<sup>33</sup> The prevalence of overweight was 10 points higher for the mother and twice as high as the general population for the children.<sup>34</sup> Homeless mothers suffered from depression thrice as high as the general population.<sup>35</sup> These findings reflect those of several US-based studies dealing with family homelessness.<sup>2,30,36</sup> For example, in Philadelphia, it was shown that between 12% and 47% of children in homeless families experience mental health problems<sup>37</sup> and slightly more than half of the homeless children in Minnesota were overweight.<sup>38</sup> In another study on homelessness in Canada, more than half

mothers interviewed suffered from major depression.<sup>39</sup> In Pennsylvania, 81% of homeless adults suffered from food insecurity.<sup>40</sup>

One of the original aspects of this study is that this was conducted in 17 languages, corresponding to the nationalities most frequently encountered in the homeless family population in the Paris region. Second, we recruited and trained bilingual psychologists and survey interviewers included former homeless families<sup>41</sup>. These interviewers also took part in the design of the questionnaire. They needed a longer training period than usual, needed more time to administer a questionnaire and experienced more emotional stress with respect to adequate professional detachment when interviewing mothers. They were provided with psychological support. Despite these challenges, employing such interviewers was better for relationships of confidence with interviewer and they brought greater personalized knowledge on homeless living conditions to the survey. Third, because of the multidisciplinary survey designed by epidemiologists and social scientists, a large range of questions were asked. Finally, families who were identified as needing specific care were referred to a health care service. This action improved the quality of the research study, providing solutions to population health needs, which in turn improved the attention given by the mothers involved to comprehensively answer the questions asked.

One limitation of our study was that we did not have a control group for comparison with housed poor families. However, studies with such a control group in the USA have shown that homeless families were more similar to housed poor families than they do single homeless people without families.<sup>2,30,36</sup> This would suggest a continuum of problems encountered. Furthermore, cohort studies have shown that the deleterious effects of homelessness on health tend to disappear more quickly if the homeless episode is not chronic and if there is not a great deal of residential instability.<sup>42</sup> However, these are precisely the situations that homeless families encounter in France (i.e. high residential instability and sustained episodes of homelessness). Even if our study has no control group, and no follow-up, we survey people who used to be excluded from similar surveys as non-French speaking homeless parents and asylum seekers. We also tried to mix methods and disciplines to understand



the very phenomenon of family homeless. Considering this effort, we believe our results must be quite alarming. These alarming results highlight the need for urgent and adapted actions for homeless families, in terms of housing policies, such as reducing housing instability and providing adequate care for homeless families, especially children.

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*Conflicts of interest:* None declared.

## Key points

- Growing number of families among the homeless population
- Homeless families suffer from malnutrition and mental health disorders
- Housing conditions, in particular residential instability, could influence access to care, health and nutrition

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## Toward a multi-country monitoring system of reproductive health in the context of endocrine disrupting chemical exposure

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**Background:** Worrying trends regarding human reproductive endpoints (e.g. semen quality, reproductive cancers) have been reported and there is growing circumstantial evidence for a possible causal link between these trends and exposure to endocrine disrupting chemicals (EDCs). However, there is a striking lack of human data to fill the current knowledge gaps. To answer the crucial questions raised on human reproductive health, there is an urgent need for a reproductive surveillance system to be shared across countries. **Methods:** A multidisciplinary network named HUMAN Reproductive health and Global ENVIRONMENT Network (HURGENT) was created aiming at designing a European monitoring system for reproductive health indicators. Collaborative work allowed setting up the available knowledge to design such a system. Furthermore we conducted an overview of 23 potential indicators, based upon a weight of evidence (WoE) approach according to their potential relation with EDC exposure. **Results:** The framework and purposes of the surveillance system are settled as well as the approach to select suitable reproductive indicators. The indicators found with the highest scores according to the WoE approach are prostate and breast cancer incidence, sex ratio, endometriosis and uterine fibroid incidence, indicators related to the testicular dysgenesis syndrome, precocious puberty incidence and reproductive hormone levels. **Conclusion:** Not only sentinel health endpoints, but also diseases with high burdens in public health are highlighted as prior indicators in the context of EDC exposure. Our work can serve as a basis to construct, as soon as possible, the first multi-country reproductive monitoring system.

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