Home foreclosure and risk of psychiatric morbidity during the recent financial crisis

K. A. McLaughlin1*, A. Nandi2, K. M. Keyes3, M. Uddin4, A. E. Aiello5, S. Galea3 and K. C. Koenen3

1 Division of General Pediatrics, Children’s Hospital Boston, Harvard Medical School, Boston, MA, USA
2 Institute for Health and Social Policy and Department of Epidemiology, Biostatistics, and Occupational Health, McGill University, Montreal, Quebec, Canada
3 Department of Epidemiology, Mailman School of Public Health, Columbia University, New York, NY, USA
4 Center for Molecular Medicine and Genetics, Department of Psychiatry and Behavioral Neurosciences, Wayne State University School of Medicine, Detroit, MI, USA
5 Department of Epidemiology, Center for Social Epidemiology and Population Health, University of Michigan School of Public Health, Ann Arbor, MI, USA

Background. A defining feature of the US economic downturn of 2008–2010 was the alarming rate of home foreclosure. Although a substantial number of US households have experienced foreclosure since 2008, the effects of foreclosure on mental health are unknown. We examined the effects of foreclosure on psychiatric symptomatology in a prospective, population-based community survey.

Method. Data were drawn from the Detroit Neighborhoods and Health Study (DNHS), waves 1 and 2 (2008–2010). A probability sample of predominantly African-American adults in Detroit, Michigan participated (n = 1547). We examined the association between home foreclosure between waves 1 and 2 and increases in symptoms of DSM-IV major depression and generalized anxiety disorder (GAD).

Results. The most common reasons for foreclosure were an increase in monthly payments, an increase in non-medical expenses and a reduction in family income. Exposure to foreclosure between waves 1 and 2 predicted symptoms of major depression and GAD at wave 2, controlling for symptoms at wave 1. Even after adjusting for wave 1 symptoms, sociodemographics, lifetime history of psychiatric disorder at wave 1 and exposure to other financial stressors between waves 1 and 2, foreclosure was associated with an increased rate of symptoms of major depression [incidence density ratio (IDR) 2.4, 95% confidence interval (CI) 1.6–3.6] and GAD (IDR 1.9, 95% CI 1.4–2.6).

Conclusions. We provide the first prospective evidence linking foreclosure to the onset of mental health problems. These results, combined with the high rate of home foreclosure since 2008, suggest that the foreclosure crisis may have adverse effects on the mental health of the US population.

Received 24 July 2011; Revised 3 October 2011; Accepted 17 October 2011; First published online 21 November 2011

Key words: Anxiety, depression, financial crisis, foreclosure, stress.

Introduction

A defining feature of the US economic downturn of 2008–2010 was the alarming rate of home foreclosure. More than 2.3 million properties went into foreclosure in 2008, representing an 81% increase from the previous year (RealtyTrac, 2009). This trend continued in 2009–2010 with foreclosure filings reported on more than 2.8 million properties in each of these years (RealtyTrac, 2010, 2011). Although a substantial number of US households have experienced foreclosure since 2008, the effects of foreclosure on health remain unknown. Given the associations of other financial stressors with health outcomes, particularly psychiatric morbidity (Kessler et al. 1987; Dew et al. 1992; Catalano et al. 1993; Dooley et al. 1996; Gallo et al. 2000; Taylor et al. 2007), the effects of foreclosure on health are likely to be substantial. If foreclosure is indeed associated with ill health, the magnitude of recent exposure to this event suggests that the foreclosure crisis could have a significant impact on the health of the US population.

A recent study examined the health status of persons seeking aid at a mortgage counseling agency in Philadelphia in relation to a representative community sample of the same area (Pollack & Lynch, 2009). Persons who were at least 2 months behind on
mortgage payments had elevated odds of hypertension and heart disease, and in a psychiatric diagnosis compared to the community sample, more than one-third met the screening criteria for major depression (Pollack & Lynch, 2009). However, this study identified characteristics of individuals at risk of foreclosure rather than the consequences of foreclosure itself. An online survey of consumers found that individuals who were behind in mortgage payments or who had experienced foreclosure in the past year had poorer self-rated health and marked elevations in psychological distress than renters and homeowners not experiencing foreclosure (Alley et al., unpublished observations). Although both of these studies found large associations between foreclosure and psychiatric outcomes, the cross-sectional study designs preclude clear inferences regarding the role of foreclosure in the onset of mental health problems.

We present, to the best of our knowledge, the first prospective study examining the effect of foreclosure on mental health using data from a longitudinal study of adults in Detroit, Michigan, a city that experienced some of the highest rates of unemployment and foreclosure during the financial crisis (Rooney, 2008; Bureau of Labor Statistics, 2011). We evaluate whether individuals who experienced foreclosure exhibit subsequent increases in symptoms of major depression and generalized anxiety disorder (GAD), both of which are sensitive to social and environmental conditions, particularly exposure to stress (Roemer et al. 1996; Kendler et al. 1999, 2003; Acierno et al. 2006; Moffit et al. 2007).

**Method**

**Sample**

Data were drawn from the Detroit Neighborhood Health Study (DNHS), a longitudinal cohort of predominately African-American adults (aged ≥18 years) living in Detroit, Michigan. A probability sample of 1547 individuals living within the Detroit city limits participated in a baseline telephone survey in 2008–2009. Respondents were sampled from a dual-frame probability sample design. Telephone numbers were obtained from two sources: (1) the US Postal Service Delivery Sequence File, which consists of the entire Detroit population and includes non-telephone and cellular phone-only households, and (2) a list-assisted sampling random-digit-dial frame, covering Detroit households that are not residential directory-listed numbers (the unlisted number frame). We matched the telephone numbers in these two databases to identify the sample addresses that had at least one listed landline telephone number and then contacted these people by telephone to participate in the telephone survey. We invited the other part of the sample with no listed landline, no telephone, or a cell phone only to participate in the survey through a postal mail effort. The overall response rate was 53.0%. Additional details regarding sampling procedures and sample characteristics are available elsewhere (Uddin et al. 2011). Weights were applied to adjust for selection probabilities and non-response and to match the sample to the Detroit population distributions on sociodemographic characteristics. A comparison of the DNHS sample with the 2005–2007 American Community Survey (ACS, 2009) showed that the sample is representative of the Detroit population in terms of age, gender, race, income and educational attainment.

A total of 1054 individuals were reinterviewed in a telephone follow-up survey 1 year later. Respondents who did not complete the wave 2 survey were younger, had completed fewer years of education, were more likely to be employed and previously married, and had greater trauma exposure than respondents who participated at both waves 1 and 2. Weights were applied to adjust for differences in the composition of the follow-up sample compared with the baseline sample. All respondents provided informed consent before completing the interviews. The Institutional Review Board of the University of Michigan approved all study procedures.

**Measures**

**Foreclosure and financial stressors**

At the follow-up, respondents were asked whether they had experienced a home foreclosure since the baseline interview. Foreclosure was defined as a repossession of the respondent’s home by a creditor as a result of non-payment. Individuals who were delinquent on mortgage payments but who had not yet experienced foreclosure were not included in the foreclosure group. Those responding affirmatively were asked about reasons for the foreclosure. Respondents were also queried about stressful life events occurring since the baseline interview. Financial stressors included job loss, being unemployed and seeking employment for at least 3 months, legal problems, problems accessing health care, and divorce.

**Psychiatric morbidity**

Symptoms of major depression and GAD in the 2 weeks prior to the survey were assessed at baseline and at the follow-up with validated instruments based on DSM-IV criteria (APA, 1994). The Patient Health Questionnaire (PHQ-9; Kroenke et al. 2001) was used
to assess depression symptoms. The nine items on the PHQ-9 are scored from 0 (not at all) to 3 (nearly every day), with scores ranging from 0 to 27. GAD was assessed with the seven-item generalized anxiety disorder scale (GAD-7; Spitzer et al. 2006). Items are scored from 0 (not at all) to 3 (nearly every day), with scores ranging from 0 to 21. Because the incidence of major depression and GAD was fairly low over the 1-year follow-up period, analyses focused on the continuous symptom counts of major depression and GAD at baseline and at the follow-up.

Sociodemographic factors

We examined the associations of a range of baseline sociodemographic factors with foreclosure and adjusted for these characteristics in subsequent models. Sociodemographic factors included sex, age (coded as <52 and ≥52 years of age based on a median split), marital status (coded as married, divorced/separated/widowed and never married) race (coded as Black or White), educational attainment (coded as less than high school, high school diploma or General Educational Development (GED), and at least some college), household income (coded as <US$35000 and ≥US$35000 based on a median split), and employment status (coded as unemployed and seeking work versus all others).

Statistical analysis

The prevalence of foreclosure was examined using cross-tabulations. The associations of foreclosure with sociodemographic factors were examined using logistic regression. Inspection of normal probability plots for the PHQ-9 and the GAD-7 suggested that neither variable was normally distributed. Further examination of the distributions for the PHQ-9 and the GAD-7 revealed that both variables had a median value of zero and were positively skewed (skewness = 1.90 and 1.92 respectively). The association between foreclosure and psychiatric symptoms at the follow-up was therefore estimated using Poisson regression, an approach that treated symptoms of major depression and GAD as count variables. Associations between foreclosure and psychopathology were examined in a series of models that sequentially added controls for sociodemographics, lifetime history of psychiatric disorders, and exposure to other financial stressors. Symptom levels at baseline were controlled in all models. Logistic regression coefficients and their standard errors were exponentiated to generate odds ratios (ORs) and 95% confidence intervals (CIs); Poisson regression coefficients and their standard errors were exponentiated to generate incidence density ratios (IDRs) and 95% CIs. Analyses were performed using SUDAAN software (Research Triangle Institute, 2008) to account for the complex survey design. Survey weights were applied to adjust for selection probabilities and non-response. Statistical significance was evaluated using two-sided 0.05 level tests.

Results

Prevalence and reasons for foreclosure

A total of 25 respondents (2.5%) reported a foreclosure between the baseline and follow-up. The most commonly reported reason for foreclosure was that the monthly payments had increased (30.6%). The next most common reasons included increases in expenses for non-medical reasons, including credit card debt, taxes and uncontrolled spending (20.5%), and a drop in household income due to job loss, divorce, or other reasons (14.4%). The least common reasons for foreclosure were medical problems (10.0%) and having...
monthly payments that were too high from the beginning (4.1%).

Correlates of foreclosure

In models that adjusted for all covariates simultaneously, foreclosure was more common among younger than older respondents (OR 4.5) and among respondents whose total household income was \(<\text{US$35000}/\text{year compared to those with higher household income (OR 3.8). Relative to respondents who did not attend college, those with at least some post-secondary education were more likely to experience foreclosure (OR 10.0). Individuals with a lifetime history of PTSD also had greater odds of experiencing foreclosure than those without a history of the disorder (OR 6.2) (Table 1). Although foreclosure was more than five times as common among Black compared to White respondents, this association was not statistically significant.

Associations of foreclosure with psychiatric symptoms

Foreclosure was associated with an increase in symptoms of depression at the follow-up, controlling for baseline levels (IDR 1.7, 95% CI 1.04–2.91) (Table 2). The association between foreclosure and depressive symptoms at the follow-up was larger in models that adjusted for sociodemographic factors (IDR 1.8, 95% CI 1.05–3.23), lifetime history of mood and anxiety disorders (IDR 2.3, 95% CI 1.42–3.82), and exposure to other financial stressors between the baseline and follow-up surveys (IDR 2.4, 95% CI 1.59–3.64). In the fully adjusted model, individuals experiencing home foreclosure experienced a 2.4 times increased rate of depressive symptoms from baseline to the follow-up than individuals not experiencing foreclosure.

Foreclosure was also associated with an increase in symptoms of GAD at the follow-up, controlling for baseline GAD symptoms (IDR 1.9, 95% CI 1.46–2.58). The association between foreclosure and symptoms of GAD at the follow-up was unchanged in models that adjusted for sociodemographic factors, lifetime history of mood and anxiety disorders, and exposure to other financial stressors between the baseline and follow-up (IDR 1.9 in all models). In the final model adjusting for all covariates, those who experienced foreclosure between the baseline and follow-up surveys experienced a 1.9 times increased rate of symptoms of GAD than those who did experience foreclosure.

Discussion

We provide novel prospective evidence documenting increases in symptoms of major depression and GAD among adults with recent exposure to foreclosure. The association between foreclosure and symptoms of depression and anxiety was observed even after rigorous adjustment for sociodemographics, prior history of psychiatric disorder, and exposure to other financial stressors, including job loss. Our findings extend two cross-sectional surveys reporting high rates of psychiatric problems among individuals experiencing foreclosure (Alley et al., unpublished observations; Pollack & Lynch, 2009) and build on an extensive literature linking stressful life events to the onset of mood and anxiety disorders (Brown et al. 1987, 1995; Shrut et al. 1989; Brown, 1993; Kendler et al. 1999, 2003; Galea et al. 2002). Qualitative research suggests that foreclosure is associated with feelings of loss, sadness, fear, helplessness, shame and embarrassment (Nettleton & Burrows, 2000; Fields et al. 2007), all of which have been linked to the onset of anxiety and mood pathology (Abramson & Sackeim, 1977; Abramson et al. 1978, 1989; Shrut et al. 1989; Brown, 1993; Brown et al. 1995). Foreclosure may be a particularly pernicious stressor because of the prolonged duration of the event (Bennett et al. 2009) and the increased likelihood of exposure to additional risk factors for psychopathology including displacement, isolation from social support networks, unstable housing and homelessness (Oxman et al. 1992; Berkman & Glass, 2000; Bennett et al. 2009; National Coalition for the Homeless, 2009; Martin, 2010).

Study findings should be interpreted in light of limitations. Although we provide novel evidence of prospective associations between foreclosure and psychiatric morbidity, a relatively small number of individuals experienced foreclosure over the 1-year follow-up. However, the foreclosure rate in our study is consistent with tracking data from Detroit in 2008–2009, which reported foreclosure filings in one out of every 136 homes. Moreover, the process of foreclosure (e.g. speed, judicial involvement, options for refinancing) may vary markedly across states and municipalities, and these differences in the foreclosure experience may have implications for mental health. Our findings therefore warrant replication in samples drawn from other geographic areas and with longer follow-up periods. Questions regarding home ownership and foreclosure were only queried at the follow-up survey. Both homeowners and renters were therefore included in the comparison group when estimating associations between foreclosure and mental health. Renters have been shown to have worse mental health than homeowners (Alley et al., unpublished observations), suggesting that their inclusion in our comparison group may have attenuated the associations between foreclosure and psychiatric symptoms. The results were unchanged,
however, when we restricted our analyses to homeowners at the follow-up survey. Because mental health problems are common among individuals at risk of foreclosure (Pollack & Lynch, 2009), it is possible that the observed associations resulted, in part, from pre-existing psychopathology. We addressed this by

<table>
<thead>
<tr>
<th>Sample characteristics</th>
<th>Prevalence of foreclosure&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Unadjusted association&lt;sup&gt;c&lt;/sup&gt;</th>
<th>Adjusted association&lt;sup&gt;d&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n (%)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>% (s.e.) OR (95% CI)</td>
<td>OR (95% CI)</td>
</tr>
<tr>
<td>Age (years)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;52</td>
<td>478 (65.0)</td>
<td>2.1 (0.7) 3.2* (1.2–8.3)</td>
<td>4.5* (1.4–14.7)</td>
</tr>
<tr>
<td>≥52</td>
<td>576 (35.0)</td>
<td>0.4 (0.1) 1.0 –</td>
<td>1.0 –</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>426 (47.2)</td>
<td>2.9 (1.2) 1.4 (0.4–4.6)</td>
<td>2.2 (0.7–7.2)</td>
</tr>
<tr>
<td>Female</td>
<td>628 (52.8)</td>
<td>2.1 (0.9) 1.0 –</td>
<td>1.0 –</td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>281 (28.9)</td>
<td>3.3 (1.6) 1.4 (0.3–5.7)</td>
<td>2.8 (0.8–10.1)</td>
</tr>
<tr>
<td>Divorced/separated/widowed</td>
<td>413 (26.2)</td>
<td>1.7 (0.6) 0.7 (0.2–2.5)</td>
<td>1.0 (0.3–3.1)</td>
</tr>
<tr>
<td>Never married</td>
<td>360 (44.9)</td>
<td>2.4 (1.3) 1.0 –</td>
<td>1.0 –</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>116 (8.0)</td>
<td>0.4 (0.4) 0.1* (0.0–0.9)</td>
<td>0.2 (0.0–1.4)</td>
</tr>
<tr>
<td>Black</td>
<td>897 (87.6)</td>
<td>2.8 (0.9) 1.0 –</td>
<td>1.0 –</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;12 years</td>
<td>133 (15.3)</td>
<td>2.7 (2.0) 0.7 (0.1–3.4)</td>
<td>0.4 (0.1–2.3)</td>
</tr>
<tr>
<td>High school diploma/GED</td>
<td>301 (42.9)</td>
<td>0.8 (0.7) 0.2 (0.0–1.3)</td>
<td>0.1* (0.0–0.5)</td>
</tr>
<tr>
<td>Some college</td>
<td>620 (41.8)</td>
<td>4.1 (1.4) 1.0 –</td>
<td>1.0 –</td>
</tr>
<tr>
<td>Household income</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;US$35000/year</td>
<td>556 (55.3)</td>
<td>3.3 (1.2) 2.0* (0.6–6.9)</td>
<td>3.8* (1.2–11.5)</td>
</tr>
<tr>
<td>≥US$35000/year</td>
<td>428 (44.7)</td>
<td>1.7 (0.9) 1.0 –</td>
<td>1.0 –</td>
</tr>
<tr>
<td>Employment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployed and seeking employment</td>
<td>168 (25.9)</td>
<td>2.2 (1.3) 0.8 (0.2–3.4)</td>
<td>0.7 (0.2–2.8)</td>
</tr>
<tr>
<td>All others</td>
<td>886 (74.1)</td>
<td>2.6 (0.9) 1.0 –</td>
<td>1.0 –</td>
</tr>
<tr>
<td>Lifetime depression wave 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Present</td>
<td>188 (18.5)</td>
<td>0.7 (0.5) 0.2 (0.1–1.0)</td>
<td>0.2 (0.0–1.1)</td>
</tr>
<tr>
<td>Absent</td>
<td>863 (81.5)</td>
<td>2.9 (0.9) 1.0 –</td>
<td>1.0 –</td>
</tr>
<tr>
<td>Lifetime GAD wave 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Present</td>
<td>51 (5.2)</td>
<td>0.2 (0.2) 0.1* (0.0–0.7)</td>
<td>0.1 (0.0–1.0)</td>
</tr>
<tr>
<td>Absent</td>
<td>1000 (94.8)</td>
<td>2.6 (0.8) 1.0 –</td>
<td>1.0 –</td>
</tr>
<tr>
<td>Lifetime PTSD wave 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Present</td>
<td>146 (13.8)</td>
<td>5.0 (3.4) 2.5 (0.5–11.5)</td>
<td>6.2* (1.1–35.4)</td>
</tr>
<tr>
<td>Absent</td>
<td>908 (86.2)</td>
<td>2.1 (0.7) 1.0 –</td>
<td>1.0 –</td>
</tr>
</tbody>
</table>

GED, General Educational Development; GAD, generalized anxiety disorder; PTSD, post-traumatic stress disorder; S.E., standard error; OR, odds ratio; CI, confidence interval.

<sup>a</sup> Weighted prevalence estimates. See Method section for details.

<sup>b</sup> Weighted prevalence of foreclosure.

<sup>c</sup> Association between foreclosure and each sociodemographic and mental health characteristic based on a univariate logistic regression model.

<sup>d</sup> Association between foreclosure and each sociodemographic and mental health characteristic based on a logistic regression model adjusting for all covariates simultaneously.

* Significant at the 0.05 level, two-sided test.
controlling for lifetime history of psychiatric disorder at wave 1, but residual history of psychiatric disorder remains a possibility. A relatively high proportion of baseline respondents did not complete the follow-up survey. It is likely that loss to follow-up was more common among those who experienced a foreclosure, given the difficulties associated with relocating individuals who change residence in a prospective study. If those individuals exposed to foreclosure and who were unable to relocate were also more likely to have mental health problems, any differential loss to follow-up would result in conservative estimates of the relationship between foreclosure and psychiatric outcomes. Finally, we controlled for factors that could be on the causal pathway linking foreclosure to psychopathology. For example, the financial stressors that were included as covariates in our analysis (e.g., job loss, divorce) could represent consequences, rather than causes, of foreclosure. Adjustment for these experiences attenuated the foreclosure–psychopathology association, highlighting the conservative nature of our estimates.

Identifying the specific aspects of the foreclosure process that increase risk for mental health problems represents an important goal for future research. Foreclosure is a prolonged event involving multiple stages, beginning with delinquent mortgage payments and progressing to legal action by the lender and eviction (Bennett et al. 2009). Determining which aspects of the foreclosure process are most detrimental for health could usefully inform the targeting of interventions. The delivery of mental health screenings and referral to low-cost mental health services in mortgage counseling agencies and other settings that provide services to individuals experiencing foreclosure represents one strategy for intervening with this at-risk population. Another goal for future research is determining whether foreclosure is associated with the onset of mental health problems other than symptoms of depression and GAD. We did not examine the associations of foreclosure with PTSD symptomatology in this study, because PTSD symptoms were not assessed in relation to foreclosure as a traumatic event. It is likely, however, that foreclosure increases risk for a variety of mental health problems, including not only depression and anxiety but also substance misuse and abuse. This possibility warrants examination among those who have experienced foreclosure.

### Table 2. Incidence density ratios (IDRs) for the association between foreclosure and psychiatric symptoms (n = 1054) in the Detroit Neighborhoods and Health Study (DNHS), 2008–2010

<table>
<thead>
<tr>
<th>Psychiatric outcomes</th>
<th>IDR (95% CI)</th>
<th>IDR (95% CI)</th>
<th>IDR (95% CI)</th>
<th>IDR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major depression</td>
<td>1.7* (1.04–2.91)</td>
<td>1.8* (1.05–3.23)</td>
<td>2.3* (1.42–3.82)</td>
<td>2.4* (1.59–3.64)</td>
</tr>
<tr>
<td>GAD</td>
<td>1.7a (1.46–2.58)</td>
<td>1.9* (1.39–2.72)</td>
<td>1.9* (1.37–2.74)</td>
<td>1.9* (1.36–2.62)</td>
</tr>
</tbody>
</table>

GAD, Generalized anxiety disorder; CI, confidence interval.

* All models are weighted to account for the complex survey design and to adjust for selection probabilities and non-response.
* Model includes controls for baseline symptom levels.
* Model includes controls for baseline symptoms and sociodemographics including age, sex, marital status, race, educational attainment, income, and employment status.
* Model includes controls for baseline symptoms, sociodemographics, and lifetime history of depression, GAD, and post-traumatic stress disorder (PTSD).
* Model includes controls for baseline symptoms, sociodemographics, lifetime history of depression, GAD and PTSD, and exposure to financial stressors (job loss, unemployment for > 3 months, legal problems, difficulty accessing health care, and divorce).
* Significant at the 0.05 level, two-sided test.
mental health services (Alley et al., unpublished observations; Pollack & Lynch, 2009), compounding
the mental health risks conferred by foreclosure. Moreover, predatory lending practices specifically
targeted low-income areas with high concentrations of racial/ethnic minorities (Newman, 2009; Ojeda, 2009),
which could exacerbate health problems in already disadvantaged segments of the population. These
findings combined with the high rate of home foreclosure since 2008 suggest that the foreclosure crisis
could have adverse effects on the mental health of the US population.

Acknowledgments

We thank R. M. Coulborn for overseeing the DNHS specimen collection, J. Slayden for coordinating the
overall DNHS project, and A. Weckle and R. Soliven for handling the DNHS specimen processing and for
laboratory technical assistance; the many Detroit residents who chose to participate in the DNHS; and
J. Delva, L. Gant, B. Marans and T. Raghunathan for contributing to the conceptual development of the
DNHS.

This study was supported by National Institutes of Health Grants DA022720, DA022720-S1, MH088283
and MH078152, and also MH082729 (to S.G. and A.A.), MH070627 and MH078928 (to K.K.), and MH092526
(to K.M.). Additional support was provided by the Robert Wood Johnson Health and Society Scholars
Small Grant Program and the University of Michigan Office of the Vice President for Research Faculty
Grants and Awards Program (M.U.). Funders provided support for data collection and analysis.
K. M. Keyes had full access to all of the data in the study and takes responsibility for the integrity of the
data and the accuracy of the data analysis.

Declaration of Interest

None.

References

96, 358–372.

84, 838–851.

Journal of Abnormal Psychology 87, 49–74.

among older versus younger adults after the 2004 Florida hurricanes. American Journal of Geriatric Psychiatry
14, 1051–1059.

Printing Office: Washington, DC.

APA (1994). Diagnostic and Statistical Manual of Mental Disorders, 4th edn. American Psychiatric Association:
Washington, DC.

Bennett GG, Scharoun-Lee M, Tucker-Seeley R (2009). Will the public’s health fall victim to the home

Berkman LF, Glass T (2000). Social integration, social networks, social support, and health. In Social Epidemiology


disorder in the community: the 1996 Detroit Area Survey of Trauma. Archives of General Psychiatry
55, 626–632.

55, 248–259.

British Journal of Psychiatry 150, 30–42.

Brown GW, Harris TO, Hiyepworth C (1995). Loss, humiliation and entrapment among women developing


751–764.


First M, Spitzer RL, Gibbon M, Williams JBW (2002). Structured Clinical Interview for DSM-IV Axis I Disorders,
New York, NY.


