Published in final edited form as:

Int J Soc Psychiatry. 2011 July ; 57(4): 402–417. doi:10.1177/0020764010362863.

DEPRESSIVE SYMPTOMS AND THEIR SOCIAL CONTEXTS: A QUALITATIVE SYSTEMATIC LITERATURE REVIEW OF CONTEXTUAL INTERVENTIONS

LAURA GOTTLIEB, MD, MPH[Postdoctoral Fellow]

Robert Wood Johnson Health and Society Scholars Program, University of California, San Francisco, Center for Health and Community, San Francisco, USA

HOWARD WAITZKIN, MD, PhD[Distinguished Professor]

Depts Sociology, Family & Community Medicine, and Internal Medicine, University of New Mexico, Albuquerque, USA

JEANNE MIRANDA, PhD[Professor]

Department of Psychiatry and Biobehavioral Sciences, University of California, Los Angeles, USA

Abstract

Background—Numerous observational studies demonstrate associations between social context and depressive symptoms, yet few intervention trials exist in this arena.

Aims—This review examines intervention trials that explore the impact of contextual change on depressive symptoms.

Methods—Electronic literature databases of PubMed and PsycINFO, bibliographies of retrieved articles and the publicly available internet were searched for English-language articles published between 1997 and 2008. Peer-reviewed studies were eligible for inclusion if they reported contextual interventions and depressive symptoms measures in adult populations without other significant underlying medical or psychological illness. In total, 2,128 studies met search term criteria. Of these, 13 studies meeting inclusion criteria were classified by type of intervention. Qualitative synthesis was used to interpret the mental health impact of contextual interventions.

Results—The interventions focused on employment, housing, poverty, parenting and violence. Eight of these studies reported a decrease in depressive symptoms and/or psychological distress in intervention groups. Interventions varied in focus, length of follow-up and measures of depressive symptoms.

Conclusions—Contextual interventions for the prevention and treatment of depressive symptoms and psychological distress can be effective, though very limited data exist in this field. Policy implications include a greater emphasis on improving context to decrease depression and other mental disorders.

© The Author(s), 2010

Correspondence to Laura Gottlieb, Robert Wood Johnson Health and Society Scholars Program, University of California, San Francisco, Center for Health and Community, 3333 California Street, Box 0844, Suite 465, San Francisco, CA 94118, USA. GottliebL@chc.ucsf.edu.

CONFLICT OF INTEREST The authors report no financial conflicts of interest and note that no outside agency had influence over the design or conduct of the study; collection, management, analysis or interpretation of the data; or preparation, review or approval of the manuscript.

Keywords

mental health; depression; social context; contextual interventions; housing; economics; violence; employment

INTRODUCTION

Psychiatric epidemiology recognizes contextual life stressors as major risk factors for depression. Work from the 1960s to 1980s elucidated a stress-illness model (Paykel *et al.*, 1969; Myers *et al.*, 1975; Lloyd, 1980; Aneshensel & Stone, 1982) that has been reaffirmed by more recent research on the social determinants of health. Both recent and chronic unemployment have been associated with depressive symptoms (Fortney *et al.*, 2007; Gilchrist & Gunn, 2007; Mascaro *et al.*, 2007). Housing insecurity has received attention as an etiological factor in depression (Fone *et al.*, 2007; Siefert *et al.*, 2007; Stack & Wasserman, 2007). Food insecurity is a predictor of depression in patients with varying ethnicity, age and gender (Siefert *et al.*, 2004; Stuff *et al.*, 2004; Galea *et al.*, 2005; Heflin *et al.*, 2005; Weigel *et al.*, 2007). Violence between intimate partners and/or as child abuse correlates with depression across ethnicity (Caetano & Cunradi, 2003; Kernic *et al.*, 2003; Geiger-Brown *et al.*, 2007; Fedovskiy *et al.*, 2008). Recent studies have also confirmed the impact of community-level violence in the etiology of depression (Siefert *et al.*, 2007). Poverty itself is highly correlated with depressive symptoms (Coiro, 2001; Ostler *et al.*, 2001; Reading & Reynolds, 2001); independent from poverty are the effects of neighbourhood disorder (Ross, 2000; Silver *et al.*, 2002; Latkin & Curry, 2003; Kubzansky *et al.*, 2005).

Although such contextual problems receive considerable attention as risk factors for mental disorders, little research has examined the impact of interventions and public policies designed to modify such contextual challenges. Based on these observational and correlation studies, decreasing life stressors should lead to decreased prevalence of depressive disorders. Such contextual strategies might prove helpful in community or primary care settings, where depressive disorders often are triggered by negative life events, may be less severe than in psychiatric settings and do not consistently respond to recommended treatment algorithms (Schwenk *et al.*, 1996; Coyne *et al.*, 2004). Given the substantial functional impairment associated with subsyndromal depression, contextual interventions for depression potentially may exert large social and economic effects (Wells *et al.*, 1989; Judd *et al.*, 2002).

To our knowledge, no systematic review has appeared regarding contextual interventions in community or primary care settings, where up to 35% of patients may meet criteria for the diagnosis of depression (Schulberg *et al.*, 1998; Hauenstein & Peddada, 2007). If intervention studies do demonstrate a considerable effect of contextual interventions, this finding could lead to suitable changes in health policy. The present literature review was undertaken to identify studies that examined the impact of contextual interventions on depression.

METHODS

Search strategy and study selection criteria

PsycInfo and PubMed literature searches were conducted using the following key terms: *depression, depressive symptoms, mental health/illness, transportation, childcare, immigration, acculturation, domestic violence, employment, unemployment, job security, housing security, housing, shelter, food security, food insecurity/insufficiency, hunger, transportation, childcare, welfare and poverty*. To identify additional studies, the

bibliographies of all relevant publications resulting from the online review, as well as additional online resources, were systematically reviewed. This search strategy, which is broader than one that relies solely on medical literature databases, has been recommended for systematic reviews of health effects of social interventions (Ogilvie *et al.*, 2005b).

The scope of the review was restricted to intervention studies published in the English language between 1997 and 2008. All studies on adults 18–65 years of age, without other major underlying medical or psychological illness, that evaluated the effect of contextual interventions on depressive symptoms were identified. All studies meeting these inclusion criteria were assessed if they incorporated a measure of depressive symptoms. Assuming it takes approximately five years for developing studies to reach publication, papers published in or after 1997 avoided confounding effects that could result from straddling the years where serotonin reuptake inhibitor therapies were introduced (1988–1992).

Study selection and quality assessment

One author (LG) reviewed the titles and abstracts of retrieved publications, selected potentially relevant articles according to the above criteria and compiled tables to summarize information on study design, intervention, setting and outcome measures. Two additional investigators (HW, JM) reviewed selected articles for relevance. A narrative presentation of the results was then undertaken. Given the heterogeneity of the interventions and study designs, statistical pooling of results was not attempted. Since study design hierarchy adherence may interfere with systematic reviews of social interventions, all studies that met the inclusion criteria were evaluated (Cook *et al.*, 1997; Ogilvie *et al.*, 2005a).

RESULTS

The review of titles and abstracts of 2,128 references from the main search led to the retrieval of 30 full-text articles. Thirteen of these studies met inclusion criteria for the final review.

Description of interventions

Studies included a broad range of interventions, including housing assistance, income supplementation, job training, parenting workshops and advocacy skill-building. The relevant studies were grouped into three categories: employment, housing and other advocacy. Most of the studies had been conducted in low-income, community-based settings, primarily with ethnically diverse populations. Six of the 13 studies reported a decrease in depression or depressive symptoms in participants; eight demonstrated improvements in these and/or other mental health symptoms, including anxiety, hostility, self-esteem or psychological distress.

Housing interventions

Several of the studies identified initially emerged from a social experiment called the Moving to Opportunity (MTO) project, funded primarily by the US Department of Housing and Urban Development between 1994 and 1997 in five US cities: Baltimore, Los Angeles, New York, Chicago and Boston (Katz *et al.*, 2001; Leventhal & Brooks-Gunn, 2003; Kling *et al.*, 2007). The MTO project developed as a large-scale demonstration of the earlier Gautreaux Program in Chicago that reported favourable impacts of housing desegregation across a range of health, economic and social outcomes (Rosenbaum *et al.*, 1991). In MTO, families living in high-poverty public housing projects were offered housing vouchers by lottery. The main intervention group received both mobility counselling and Section 8 vouchers, with use restricted to census tracts where poverty rates were <10%.

The largest of the three studies from the MTO project analyzed data from all five MTO sites and was included in the review. Outcomes were measured approximately five years after random assignment for 4,248 households. Results demonstrated adult mental health improvement consistent across several mental health measures including distress, depression, anxiety, calmness and sleep in the experimental versus the control groups (Kling *et al.*, 2007).

Another study in New York examined the effects of moving from public housing projects in poor neighbourhoods to rent-subsidized rowhouses in middle-class neighbourhoods (Fauth *et al.*, 2004). Two years after relocation, adults who moved were less likely to be exposed to violence and disorder, to experience health problems, and to abuse alcohol, although no programme effects were found on adults' symptoms of depression and anxiety.

A study in England observed the effect of hostelling and re-housing on the mental health of formerly homeless families (Karim *et al.*, 2006). Eighty one families were initially interviewed for a baseline assessment of mental health and parenting problems following admission to hostels for the homeless. In the majority of re-housed families, parents commented positively on their own mental health, with perceived improvement in mood symptoms, stress levels and substance abuse. Despite qualitative improvements in mental health, quantitative changes in depressive symptoms scores were not detected.

The final study on housing interventions and mental health, conducted in Israel, determined if psychological distress decreased among immigrant consumers of subsidized housing (Ponizovsky & Perl, 1997). Three hundred and two Russian immigrants received subsidized housing during their transition to Israel. Overall, psychological distress did decrease significantly among participants. Although subsidized housing seemed to protect recent immigrants from environmental stressors provoking obsessiveness, hostility and paranoid ideation, the intervention did not lead to lower anxiety or depression.

In summary, the four community-based housing interventions took place among markedly diverse populations, although all focused on low-income communities. Studies that detected no improvement in depressive symptoms did demonstrate improvement in other markers of psychological distress, including calmness and peacefulness, self-perception of depressive symptoms, paranoia, hostility and obsessiveness. The largest study identified significant improvement in depressive symptoms resulting from housing interventions.

Employment interventions

Five studies examined employment interventions and mental health outcomes (Vinokur *et al.*, 2000; Vuori *et al.*, 2002; Vuori & Silvonen, 2005; Koivisto *et al.*, 2007). None of the five studies actually offered employment as an intervention; all provided employment workshops to those who were unemployed or facing employment transitions.

The Michigan Prevention Research Center Job Search Program (JOBS I and II) conducted the first of these studies. This programme was designed as a preventive intervention for recently unemployed job seekers to facilitate their return to the labour market and to prevent the negative mental health consequences of unemployment. The project recruited 1,801 men and women from four Michigan unemployment offices. The initial reports on the programme's short-term effects were published before 1997 and were therefore not included in this review (Vinokur *et al.*, 1995). At two-year follow-up, subjects in the randomly assigned intervention group showed improved overall mental health and higher emotional function as well as a trend towards less major depression that did not quite reach statistical significance (Vinokur *et al.*, 2000). The findings were more pronounced for those with high risk of depression assessed at pre-test.

While the JOBS intervention focused on the recently unemployed, the Finnish Työhön Programme looked at the mental health effects of a similar intervention among the long-term unemployed. As in Michigan, researchers performed both six-month (Vuori *et al.*, 2002) and two-year follow-up analyses (Vuori & Silvonen, 2005). At six months, the intervention had a beneficial effect on distress but not on depressive symptoms. At two-year follow-up, however, significant decreases in depression and increases in self-esteem occurred in the experimental versus the control group. The authors argue that removing the year-long buffer provided by the Finnish government's unemployment programmes contributed to the significance of findings at the two-year follow-up. In both analyses, those at highest risk of depression benefited most from the intervention.

Another employment intervention, Support and Training Result in Valuable Employees (STRIVE), conducted in California, collected pre- and post-intervention data between 2000 and 2002 from clients attending pre-employment training classes (Matt *et al.*, 2006). Analyses showed a significant decrease in depression among subjects completing the programme. Notably, the baseline levels of depression in the STRIVE cohorts were approximately three times higher than the normative sample of community residents.

Finally, a Finnish study demonstrated the effects of a School-to-Work workshop on a group of young people aged 17–25, facing the transition from school to employment (Koivisto *et al.*, 2007). Ten-month follow-up demonstrated no effect on depression or distress in the randomly assigned intervention group. However, as in other employment interventions, participation in the School-to-Work groups was more effective at preventing psychological distress and depressive symptoms in those with high baseline risk of depression.

In summary, most community-level preventive interventions for unemployed adults suggested long-term effects of pre-employment training on decreasing depressive symptoms and psychological distress among participants, particularly among those depressed at baseline.

Other advocacy interventions

Four studies in this review examined non-employment, non-housing-related contextual interventions. A study in Colorado explored a Head Start-based parenting intervention offering home- and/or centre-based parenting interventions for low-income mothers (Robinson & Emde, 2004). Three hundred and nine participants were randomly assigned to control and intervention groups. Although the intervention did not improve maternal depression scores, a significant decrease occurred in maternal hostility, which the authors posited as one dimension of depression.

More recently, a study in Wisconsin examined the effects of a multi-dimensional anti-poverty programme on 406 low-income, unmarried women (Gassman-Pines & Yoshikawa, 2006). The New Hope programme offered wage supplementation, affordable health insurance, childcare subsidies and community service jobs for participants. The intervention significantly decreased depressive symptoms among programme participants.

Two additional articles meeting inclusion criteria examined the effects of shelter programmes on depressive symptoms in former victims of domestic violence. One study in an undisclosed US urban city analyzed the effects of a 'strengths and community-based support and advocacy intervention' for a cohort of 80 battered women (Sullivan *et al.*, 2002). Centre for Epidemiological Studies Depression Scale (CES-D) scales showed a decrease in women's depression and an increase in self-esteem scores. An earlier study looked at a 10-week post-shelter advocacy programme located in the US midwest in which trained advocates worked one-on-one with randomized participants, helping women to generate and

access community resources (Sullivan & Bybee, 1999). Like the later programme, this intervention resulted in improvements in depressive symptoms, higher quality of life scores and diminished exposure to violence.

In summary, three of the four other advocacy interventions demonstrated improvements in depressive symptoms.

DISCUSSION

This systematic review of evidence from 13 intervention studies conducted primarily in community settings provides initial evidence about the favourable effects of contextual interventions on decreasing depressive symptoms, primarily in the low-income, ethnically diverse communities in which they were undertaken. When psychological distress and other mental health diagnoses are included, the reviewed research suggests that contextual interventions impact mental health outcomes. Yet these types of interventions are difficult to compare across studies since the goals and formats of the interventions thus far have been heterogeneous. As a result, before interventions are applied across populations, the quantity and quality of the evidence must be strengthened; the field demands more rigorous and integrated research.

The results described here pertain to depressive symptoms, not depression diagnoses. The social and economic relevance of depressive symptoms should be underscored: significant research points to the prevalence and costliness of subsyndromal depression (Wells *et al.*, 1989; Judd *et al.*, 2002). The findings of this review indicate that public policy emphasizing more widespread contextual changes may lead to benefits through improved functioning and decreased medical costs associated with depressive symptoms. It is not clear from the studies undertaken whether the measures capturing subsyndromal depression are medicalizing the distress associated with unemployment, poverty, homelessness, etc. (Chodoff, 2002; Blazer, 2005). Clarifying the distinction between subsyndromal depression and general distress may be useful for future work, including that which examines biological differences between these disorders. Until that work is undertaken, contextual interventions do seem to be one way to address the unhappiness associated with depression syndromes.

There are insufficient data on whether these types of interventions may also serve to treat or prevent major depression, although several of the included studies demonstrated improved responses in those participants at the highest baseline risk of depression (Ponizovsky & Perl, 1997; Sullivan & Bybee, 1999; Vinokur *et al.*, 2000; Sullivan *et al.*, 2002; Vuori *et al.*, 2002; Robinson & Emde, 2004; Gassman-Pines & Yoshikawa, 2006). This observation suggests that the effects of contextual interventions may prove more robust in depressed samples. In a study within a depression clinic in San Francisco, Miranda *et al.* (2003) did include some contextual interventions in addition to cognitive behavioural therapy and found these contextual support interventions helped in Spanish-language populations. But the intervention groups in this study received intensive outreach that would prove difficult to provide in most treatment environments. Other difficult-to-replicate therapies in samples of mild to moderately depressed patients have also shown some effectiveness; for instance, a mild to moderately depressed sample showed improvement with animal (dolphin)-facilitated therapy in Honduras (Antonioli & Reveley, 2005). The concept that contextual interventions may improve health outcomes more generally is bolstered further by recent studies from Chicago and Seattle looking at the provision of housing for chronically ill homeless adults (Larimer *et al.*, 2009; Sadowski *et al.*, 2009), although no mental health outcomes were included in either study. Future work should explore the differences between using contextual interventions as treatment for depressed patients in primary care or other

treatment settings, and in ethnicity- and language-specific populations, versus using them for prevention in community-wide samples.

Alegría *et al.* (2003) have pointed to public policies as one potentially powerful way to reduce mental health disparities among minority populations. More broadly, Blazer (2005) describes the influence of social factors on mental health and redefines social psychiatry's value in a time of increasing social pressures. The positive effects of specific interventions in this review substantiate these arguments. Many of these interventions can translate readily into social policy reform. This observation applies not only to the MTO studies, but also to other contextual interventions focusing on employment, domestic violence and poverty. The impacts of contextual changes are not limited to adults, to which the present review was confined. For instance, a study by Costello *et al.* (2003) examined the effects of family income changes on Native American children's mental health outcomes and also showed significant results.

There are several important limitations to the studies included in this review, as well as substantial limitations to efforts to synthesize findings from this broad range of studies. The heterogeneity of both interventions and measurement tools prevented the use of quantitative metaanalyses. Some reports included both subjective and objective measures (Karim *et al.*, 2006), while the majority relied solely on depressive symptom questionnaires, many of which were modified from their original forms (Ponizovsky & Perl, 1997; Vinokur *et al.*, 2000; Vuori *et al.*, 2002; Vuori & Silvonen, 2005; Matt *et al.*, 2006) and differed in length and symptoms measured. For instance, the Talbier Brief Distress Inventory (TBDI) included a depression scale but also included obsessiveness, demoralization, paranoia, sensitiveness, hostility and anxiety scales – all within its brief 24 questions (Ponizovsky & Perl, 1997). How the findings from such an instrument compare to a 20-item CES-D instrument for measuring depressive symptoms remains unknown. These measurement comparison challenges simply highlight an expansive problem in this field: what are the relationships between measures of psychological distress, subsyndromal depression and unhappiness? Few data elaborate this subject. Studies reporting more general screening measures like the CES-D versus those for clinical diagnostic interpretations (e.g. Structured Clinical Interview for Diagnostic and Statistical Manual of Mental Disorders (SCID)) were more likely to report significant decreases in symptoms. A comparison of contextual interventions using various depression measures may clarify these measurement questions. This review examined only English-language publications, which potentially has limited its scope.

Several limitations also arose with sampling and data issues. Certain studies failed to collect adequate baseline data on participants (Fauth *et al.*, 2004; Matt *et al.*, 2006). In one case, this problem led to an inability to determine adequately if randomization was successful (Fauth *et al.*, 2004). Additionally, several studies performed analyses on small samples, leading to difficulties in achieving adequate statistical power (Sullivan & Bybee, 1999; Sullivan *et al.*, 2002; Robinson & Emde, 2004; Karim *et al.*, 2006; Koivisto *et al.*, 2007). In some cases, small sample sizes resulted from the low intervention uptake (intervention was offered to many clients who declined) and follow-up rates (Robinson & Emde, 2004).

So how can the relative sparseness of data on contextual interventions within peer-reviewed literature be addressed? These data may exist in non-academic realms. For instance, unpublished or government-reported data on food security, welfare-to-work, housing assistance and unemployment programmes could be mined. This information – like the work of Alegría *et al.* (2003) on the Earned Income Tax Credit – could be combined with mental health outcome data. Alternatively, pursuing new arenas for experimental studies appears reasonable, even given these limited findings, and calls have appeared for such an approach in the literature on the social determinants of health (Oakes, 2004). New research should

investigate the impact of different types of interventions in specific populations, and the impact of similar interventions in different communities. Though disentangling bundled interventions (interventions in more than one arena – like employment and housing) can prove challenging, bundled interventions may more accurately reflect subjects' needs in complicated contextual circumstances.

Recently, Thomas Insel, director of the US National Institute of Mental Health, urged researchers to consider a new paradigm involving more pre-emptive approaches to mental health – approaches that target those with subdiagnostic criteria and those at greatest risk of future mental illness (Insel, 2008). In his call for a paradigm shift, Insel referenced examples such as those at genetic risk for mental illness or those with early changes on brain imaging. Our systematic review suggests that pre-emption may also involve policies to modify patients' contextual risks. A new era of government commitments to effective social programmes offers an opportunity to expand the limited research in this field.

Acknowledgments

The authors thank Tim Wadsworth, PhD, of University of Colorado at Boulder and William Apfeldorf, MD, PhD, of University of New Mexico for their manuscript review.

The authors' work on this project was partially supported by NIMH (National Institute of Mental Health) grant #R25MH060288-09. Both Tim Wadsworth and William Apfeldorf are also partially supported under NIMH grant #R25MH060288-9.

REFERENCES

- Alegria M, Perez DJ, Williams S. The role of public policies in reducing mental health status disparities for people of color. *Health Affairs*. 2003; 22:51–64. [PubMed: 14515881]
- Aneshensel C, Stone J. Stress and depression: A test of the buffering model of social support. *Archives of General Psychiatry*. 1982; 39(12):1392–1396. [PubMed: 7149899]
- Antonoli C, Reveley A. Randomized controlled trial of animal-facilitated therapy with dolphins in the treatment of depression. *British Medical Journal*. 2005; 331:1231–1235. [PubMed: 16308382]
- Blazer, D. *The Age of Melancholy: 'Major Depression' and its Social Origins*. Routledge; New York: 2005.
- Caetano R, Cunradi C. Intimate partner violence and depression among whites, blacks and Hispanics. *Annals of Epidemiology*. 2003; 13(10):661–665. [PubMed: 14599729]
- Chodoff P. The medicalization of the human condition. *Psychiatric Services*. 2002; 53(5):627–628. [PubMed: 11986517]
- Coiro MJ. Depressive symptoms among women receiving welfare. *Women and Health*. 2001; 32(1–2): 1–23.
- Cook DJ, Mulrow CD, Haynes RB. Systematic reviews: Synthesis of best evidence for clinical decisions. *Annals of Internal Medicine*. 1997; 126(5):376–380. [PubMed: 9054282]
- Costello EJ, Compton S, Keeler G, Angold A. Relationships between poverty and psychopathology: A natural experiment. *Journal of the American Medical Association*. 2003; 290(15):2023–2029. [PubMed: 14559956]
- Coyne JC, Thompson R, Pepper CM. The role of life events in depression in primary medical care versus psychiatric settings. *Journal of Affective Disorders*. 2004; 82(3):353–361. [PubMed: 15555686]
- Fauth R, Leventhal T, Brooks-Gunn J. Short-term effects of moving from public housing in poor to middle-class neighborhoods on low-income, minority adults' outcomes. *Social Science and Medicine*. 2004; 59(11):2271–2284. [PubMed: 15450703]
- Fedovskiy K, Higgins S, Paranjape A. Intimate partner violence: How does it impact major depressive disorder and post-traumatic stress disorder among immigrant Latinas? *Journal of Immigrant and Minority Health*. 2008; 10(1):45–51. [PubMed: 17503184]

- Fone D, Dunstan F, Williams G, Lloyd K, Palmer S. Places, people and mental health: A multilevel analysis of economic inactivity. *Social Science and Medicine*. 2007; 64(3):633–645. [PubMed: 17070974]
- Fortney J, Rushton G, Wood S, Zhang L, Xu S, Dong F, Rost K. Community-level risk factors for depression hospitalizations. *Administration and Policy in Mental Health*. 2007; 34(4):343–352. [PubMed: 17294123]
- Galea S, Ahern J, Rudenstine S, Wallace Z, Vlahov D. Urban built environment and depression: A multilevel analysis. *Journal of Epidemiology and Community Health*. 2005; 59(10):822–827. [PubMed: 16166352]
- Gassman-Pines A, Yoshikawa H. Five-year effects of an anti-poverty program on marriage among never-married mothers. *Journal of Policy Analysis and Management*. 2006; 25:11–30.
- Geiger-Brown J, Muntaner C, McPhaul K, Lipscomb J, Trinkoff A. Abuse and violence during home care work as predictor of worker depression. *Home Health Care Services Quarterly*. 2007; 26(1): 59–77. [PubMed: 17387052]
- Gilchrist G, Gunn J. Observational studies of depression in primary care: What do we know? *BMC Family Practice*. 2007; 8:28. [PubMed: 17493280]
- Hauenstein EJ, Peddada SD. Prevalence of major depressive episodes in rural women using primary care. *Journal of Health Care for the Poor and Underserved*. 2007; 18(1):185–202. [PubMed: 17337807]
- Heflin CM, Siefert K, William DR. Food insufficiency and women's mental health: Findings from a three-year panel of welfare recipients. *Social Science and Medicine*. 2005; 61(9):1971–1982. [PubMed: 15927331]
- Insel T. From prevention to pre-emption: A paradigm shift in psychiatry. *Psychiatric Times*. 2008; 25(9):1. [PubMed: 19590742]
- Judd LL, Schettler PJ, Akiskal HS. The prevalence, clinical relevance and public health significance of subthreshold depressions. *Psychiatric Clinics of North America*. 2002; 25(4):685–698. [PubMed: 12462855]
- Karim K, Tischler V, Gregory P, Vostanis P. Homeless children and parents: Short-term mental health outcome. *International Journal of Social Psychiatry*. 2006; 52(5):447–458. [PubMed: 17278346]
- Katz LF, Kling JR, Liebman JB. Moving to Opportunity in Boston: Early results of a randomized mobility experiment. *Quarterly Journal of Economics*. 2001; 116:607–654.
- Kernic MA, Holt VL, Stoner JA, Wolf ME, Rivara FP. Resolution of depression among victims of intimate partner violence: Is cessation of violence enough? *Violence and Victims*. 2003; 18(2): 115–129. [PubMed: 12816399]
- Kling JR, Liebman JB, Katz LF. Experimental analysis of neighborhood effects. *Econometrica*. 2007; 75:83–119.
- Koivisto P, Vuori J, Nykyri EL. Effects of School-to-Work group method among young people. *Journal of Vocational Rehabilitation*. 2007; 70:277–296.
- Kubzansky L, Subramanian SV, Kawachi I, Fay ME, Soobader MJ, Berkman LF. Neighborhood contextual influences on depressive symptoms in the elderly. *American Journal of Epidemiology*. 2005; 162(3):253–260. [PubMed: 15987730]
- Larimer ME, Malone DK, Garner MD, Atkins DC, Burlingham B, Lonczak H, Tanzer K, Ginzler J, Clifasefi S, Hobson W, Marlatt GA. Health care and public service use and costs before and after provision of housing for chronically homeless persons with severe alcohol problems. *Journal of the American Medical Association*. 2009; 301(13):1349–1357. [PubMed: 19336710]
- Latkin CA, Curry AD. Stressful neighborhoods and depression: A prospective study of the impact of neighborhood disorder. *Journal of Health and Social Behavior*. 2003; 44(1):34–44. [PubMed: 12751309]
- Leventhal T, Brooks-Gunn J. Moving to Opportunity: An experimental study of neighborhood effects on mental health. *American Journal of Public Health*. 2003; 93(9):1576–1582. [PubMed: 12948983]
- Lloyd C. Life events and depressive disorder reviewed: II. Events as precipitating factors. *Archives of General Psychiatry*. 1980; 37(5):541–548. [PubMed: 7377910]

- Mascaro N, Arnette NC, Santana MC, Kaslow NJ. Longitudinal relations between employment and depressive symptoms in low-income, suicidal African American women. *Journal of Clinical Psychology*. 2007; 63(6):541–553. [PubMed: 17457849]
- Matt G, Bellardita L, Fischer G, Silverman S. Psychological resources and mental health among the difficult-to-employ: Can a pre-employment training program make a difference? *Journal of Vocational Rehabilitation*. 2006; 24:33–43.
- Miranda J, Azocar F, Organista KC, Dwyer E, Areane P. Treatment of depression among impoverished primary care patients from ethnic minority groups. *Psychiatric Services*. 2003; 54(2):219–225. [PubMed: 12556604]
- Myers JK, Lindenthal JJ, Pepper MP. Life events, social integration and psychiatric symptomatology. *Journal of Health and Social Behavior*. 1975; 16(4):421–427. [PubMed: 1214046]
- Oakes JM. The (mis)estimation of neighborhood effects: Causal inference for a practicable social epidemiology. *Social Science and Medicine*. 2004; 58(10):1929–1952. [PubMed: 15020009]
- Ogilvie D, Egan M, Hamilton V, Petticrew M. Systematic reviews of health effects of social interventions: 2. Best available evidence: How low should you go? *Journal of Epidemiology and Community Health*. 2005a; 59:886–892. [PubMed: 16166365]
- Ogilvie D, Hamilton V, Egan M, Petticrew M. Systematic reviews of health effects of social interventions: 1. Finding the evidence: How far should you go? *Journal of Epidemiology and Community Health*. 2005b; 59:804–808. [PubMed: 16100321]
- Ostler K, Thompson C, Kinmonth AL, Peveler RC, Stevens L, Stevens A. Influence of socio-economic deprivation on the prevalence and outcome of depression in primary care: The Hampshire Depression Project. *British Journal of Psychiatry*. 2001; 178(1):12–17. [PubMed: 11136204]
- Paykel ES, Myers JK, Dienes MN, Klerman GL, Lindenthal JJ, Pepper MP. Life events and depression: A controlled study. *Archives of General Psychiatry*. 1969; 21(6):753–760. [PubMed: 5389659]
- Ponizovsky A, Perl E. Does supported housing protect recent immigrants from psychological distress? *International Journal of Social Psychiatry*. 1997; 43(2):79–86. [PubMed: 9252821]
- Reading R, Reynolds S. Debt, social disadvantage and maternal depression. *Social Science and Medicine*. 2001; 53(4):441–453. [PubMed: 11459395]
- Robinson J, Emde R. Mental health moderators of Early Head Start on parenting and child development: Maternal depression and relationship attitudes. *Parenting: Science and Practice*. 2004; 4:73–97.
- Rosenbaum J, Popkin S, Kaufman J, Rusin J. Social integration of low-income black adults in middle-class white suburbs. *Social Problems*. 1991; 38(4):448–461.
- Ross C. Neighborhood disadvantage and adult depression. *Journal of Health Social Behavior*. 2000; 41:177–187.
- Sadowski LS, Kee RA, VanderWeele TJ, Buchanan D. Effect of a housing and case management program on emergency department visits and hospitalizations among chronically ill homeless adults. *Journal of the American Medical Association*. 2009; 300(17):1771–1778. [PubMed: 19417194]
- Schulberg HC, Katon W, Simon GE, Rush AJ. Treating major depression in primary care practice: An update of the Agency for Health Care Policy and Research Practice Guidelines. *Archives of General Psychiatry*. 1998; 55(12):1121–1127. [PubMed: 9862556]
- Schwenk TL, Coyne JC, Fechner-Bates S. Differences between detected and undetected depressed patients in primary care and depressed psychiatric patients. *General Hospital Psychiatry*. 1996; 18(6):407–415. [PubMed: 8937906]
- Siefert K, Finlayson TL, Williams DR, Delva J, Ismail AI. Modifiable risk and protective factors for depressive symptoms in low-income African American mothers. *American Journal of Orthopsychiatry*. 2007; 77(1):113–123. [PubMed: 17352592]
- Siefert K, Heflin CM, Corcoran ME, Williams DR. Food insufficiency and physical and mental health in a longitudinal survey of welfare recipients. *Journal of Health and Social Behavior*. 2004; 45(2):171–186. [PubMed: 15305758]

- Silver E, Mulvey EP, Swanson JW. Neighborhood structural characteristics and mental disorder: Faris and Dunham revisited. *Social Science and Medicine*. 2002; 55(8):1457–1470. [PubMed: 12231022]
- Stack S, Wasserman I. Economic strain and suicide risk: A qualitative analysis. *Suicide and Life-Threatening Behavior*. 2007; 37(1):103–112. [PubMed: 17397284]
- Stuff JE, Casey PH, Szeto KL, Gossett JM, Robbins JM, Simpson PM, Connell C, Bogle ML. Household food insecurity is associated with adult health status. *Journal of Nutrition*. 2004; 134(9):2330–2335. [PubMed: 15333724]
- Sullivan C, Bybee D. Reducing violence using community-based advocacy for women with abusive partners. *Journal of Consulting and Clinical Psychiatry*. 1999; 67(1):43–53.
- Sullivan C, Bybee D, Allen N. Findings from a community-based program for battered women and their children. *Journal of Interpersonal Violence*. 2002; 17(9):915–936.
- Vinokur AD, Price RH, Schul Y. Impact of the JOBS intervention on unemployed workers varying in risk for depression. *American Journal of Community Psychology*. 1995; 23(1):39–74. [PubMed: 7572826]
- Vinokur AD, Schul Y, Vuori J, Price RH. Two years after job loss: Long-term impact of the JOBS program on reemployment and mental health. *Journal of Occupational Health Psychology*. 2000; 5(1):32–47. [PubMed: 10658883]
- Vuori J, Silvonen J. The benefits of a preventive job search program on reemployment and mental health at two-year follow-up. *Journal of Occupational Health Psychology*. 2005; 78(1):43–52.
- Vuori J, Silvonen J, Vinokur AD, Price RH. The Työhön Job Search Program in Finland: Benefits for the unemployed with risk of depression or discouragement. *Journal of Occupational Health Psychology*. 2002; 7(1):5–19. [PubMed: 11827233]
- Weigel MM, Armijos RX, Hall YP, Ramirez Y, Orozco R. The household food insecurity and health outcomes of US–Mexico border migrant and seasonal farmworkers. *Journal of Immigrant and Minority Health*. 2007; 9(3):157–169. [PubMed: 17245658]
- Wells KB, Stewart A, Hays RD, Burnam MA, Rogers W, Daniels M, Berry S, Greenfield S. The functioning and well-being of depressed patients: Results from the Medical Outcomes Study. *Journal of the American Medical Association*. 1989; 262(7):914–919. [PubMed: 2754791]

Table 1

Housing interventions used to prevent or treat depressive symptoms

Study	Study design	Setting, participants, intervention	Depressive symptom outcomes	Treatment effect	Methodological limitations
Kling <i>et al.</i> , 2007	Randomized controlled	<i>Content</i> Families from public housing in high-poverty neighbourhoods randomized into three groups: (a) no new assistance but ongoing eligibility for public housing; (b) Section 8 vouchers without geographical restriction; (c) Section 8 voucher restricted to census tracts where poverty rates <10% and mobility counselling <i>Recruitment</i> Housing projects in five US cities with poverty rates >40% <i>n</i> = 4,248 households <i>Measure(s)</i> CIDL-SF; adjusted K6 Scale for distress	Significant decrease in depression, anxiety and distress scores	$p < 0.05$ by ordinary least squares regression	MTO sample showed higher prevalence of major depressive disorder than national average Volunteer and urban participants may differ from other impoverished populations Limited time given to use voucher which also may lead to self-selection of 'compliant' participants
Fauth <i>et al.</i> , 2004	Randomized controlled	<i>Content</i> Low-income minority families residing in public and private housing in high-poverty areas offered relocation to publicly funded rowhouses in middle-class neighbourhoods <i>Recruitment</i> Public housing offices or facilities in southwest Yonkers <i>n</i> = 173 moved; 142 comparison families <i>Measures</i> 38 items from SDDS-PC	No programme effects were found on adults' symptoms of depression and anxiety	Not significant by ordinary least squares regression	No baseline data Small 'stayer' sample used from those who originally applied to lottery Volunteer sample may not be generalizable Unable to discern effects of neighbourhood versus housing type because of conspicuousness of movers' new housing
Karim <i>et al.</i> , 2006	Cohort	<i>Content</i> Advocates provided assistance with families' housing and social care needs during their stay at the hostel <i>Recruitment</i> Two hostels for homeless families <i>n</i> = 35 <i>Measure(s)</i> HADS; semi-structured interviews used to further explore mental health problems	No significant improvement quantitative mental health outcomes Majority of parents note subjective improvement depressive symptoms after re-housing	Objective findings not significant by Wilcoxon matched pairs non-parametric tests Interviews with subjective improvement in depression	Small sample size Short follow-up time
Ponizovsky & Perl, 1997	Cohort	<i>Content</i> Supported housing offered to recent Russian immigrants <i>Recruitment</i> Six Jerusalem hostels and two typical Jerusalem areas for community surveys <i>n</i> = 302 in supported housing; 419 in community settings, matched by gender, age, education <i>Measure(s)</i> TBDI	Supported housing decreases distress measures of obsessiveness, hostility and paranoid ideation, but not anxiety, depression or sensitivity	$p < 0.05$ by <i>t</i> -tests to compare means	Non-random referrals to supported housing group Small sample size Russian immigrants to Israel: majority of sample fleeing from persecution – not generalizable

MTO: Moving to Opportunity; CIDI-SF: Composite International Diagnostic Interview Short Form; HSCDS: Hopkins Symptom Checklist Depression Scale; SDDS-PC: Symptom-Driven Diagnostic System for Primary Care; HADS: Hospital Anxiety and Depression Scale; TBDI: Talbith Brief Distress Inventory (self-reporting questionnaire for measuring five symptoms: paranoia, obsessiveness, anxiety, depression, hostility and sensitivity)

Table 2

Employment interventions used to prevent or treat depressive symptoms

Study	Study design	Setting, participants, intervention	Depressive symptom outcomes	Treatment effect	Methodological limitations
Vinokur <i>et al.</i> , 2000	Randomized controlled	<i>Content</i> Five-day intensive course (four hours/day) designed to increase sense of mastery and motivation to search for a job by learning job-search skills and inoculation against set-backs <i>Recruitment</i> Four unemployment offices in Michigan <i>n</i> = 1,801 <i>Measure(s)</i> 11-item Finnish adaptation of HSCDS and University of Michigan CIDI short version	Beneficial effects on depressive symptoms at two-year follow-up Trend towards participants being less likely to meet major depression criteria	$p < 0.05$; $p < 0.10$ by ordinary least square regression	Only short-term unemployed (three months or less) 46% of those assigned to intervention showed up for intervention
Vuori <i>et al.</i> , 2002	Randomized controlled	<i>Content</i> See Vinokur <i>et al.</i> , 2000 <i>Recruitment</i> Four employment offices through mail, phone and group presentations; media advertisements; phone contact with recently laid-off workers; recruiting services of association of unemployed, trade unions and universities <i>n</i> = 1,225 <i>Measure(s)</i> 10-item Finnish adaptation of HSCDS; GHQ-12 for psychological distress	Impact on psychological distress but not on depressive symptoms at six-month follow-up Intervention moderated by risk for depression (greater baseline risk → more effect)	$p < 0.05$ by linear regression	Contextual and policy differences between Finland and US Volunteers different from average Finnish unemployed No explanation of how psychological distress scale may overlap with depressive symptoms
Vuori & Silvonen, 2005	Randomized controlled	<i>Content</i> See Vinokur <i>et al.</i> , 2000 <i>Recruitment</i> Four employment offices through mail, phone and group presentations; media advertisements; phone contact with recently laid-off workers; recruiting services of association of unemployed, trade unions and universities <i>n</i> = 1,230 <i>Measure(s)</i> 10-item Finnish adaptation of HSCDS	Decreased depressive symptoms Increased self-esteem	$p < 0.05$ by linear regression	See Vuori <i>et al.</i> , 2002
Matt <i>et al.</i> , 2006	Cohort	<i>Content</i> Three-week job readiness training programme coupled with on-site support services that targets difficult-to-employ, low-education adults <i>Recruitment</i> Referrals from graduates, media, drug and alcohol rehabilitation facilities and probation officers <i>n</i> = 1,133 <i>Measure(s)</i> BSI	Decreased depressive symptoms	$p < 0.01$ by two-factorial between-subjects ANOVA	Low initial response rate High drop-out rate Pre-post-comparison – no control group
Koivisto <i>et al.</i> , 2007	Randomized controlled	<i>Content</i> See Vinokur <i>et al.</i> , 2000	Preventive effect on psychological distress and depressive symptoms in	$p < 0.05$ by linear regression	Small sample Short follow-up time

Study	Study design	Setting, participants, intervention	Depressive symptom outcomes	Treatment effect	Methodological limitations
	<i>Recruitment</i> Five vocational institutes in western Finland <i>n</i> = 416 <i>Measure(s)</i> 10-item Finnish adaptation of HSCDS; GHQ-12 for psychological distress	those at high risk of depression at study onset			Context in western Finland – economy stalled at time of intervention in that area Many (55%) participants had already found employment or were full-time students at time of programme

HSCDS: Hopkins Symptom Checklist Depression Scale; CIDI: Composite International Diagnostic Interview; General Health Questionnaire; BSI: Brief Symptom Inventory Depression and Anxiety Scales

Table 3

Other advocacy interventions used to prevent or treat depressive symptoms

Study	Study design	Setting, participants, intervention	Depressive symptom outcomes	Treatment effect	Methodological limitations
Robinson & Emde, 2004	Randomized controlled	<i>Content</i> Centre- and/or home-based child development and parenting intervention <i>Recruitment</i> Churches, gathering places, clinics and hospitals in Denver <i>n</i> = 309 <i>Measure(s)</i> CES-D	No significant effect on maternal depression but positive effect of intervention on maternal hostility	Not significant by repeated-measures models via the SAS MIXED Procedure	Low follow-up rates despite participant availability Brief assessments of depression and insecure relationship attitudes Small sample size/insufficient power to address central hypothesis Did not examine relationship between hostility and depression
Gassman-Pines & Yoshikawa, 2006	Randomized controlled	<i>Content</i> Participation in an anti-poverty programme that increased employment and income <i>Recruitment</i> Two poor neighbourhoods of Milwaukee, Wisconsin <i>n</i> = 406 <i>Measure(s)</i> 20-item CES-D	Marginally significant decrease in depression scores	$p < 0.10$ by ordinary least squares regression	Relatively small sample size may limit significance Volunteer sample not representative of income, age or ethnicity of general population Unmeasured variables – e.g. associations between marriage and income – limit generalizability
Sullivan <i>et al.</i> , 2002	Randomized controlled	<i>Content</i> 16 weeks free advocacy for mothers and children <i>Recruitment</i> Domestic violence shelter or at time of presentation to community-based families services organization or state Social Services Department <i>n</i> = 80 <i>Measure(s)</i> CES-D	Decreased depressive symptoms and increased self-esteem	$p < 0.05$ by multi- and univariate analysis of variance	Small sample size Short follow-up (eight months)
Sullivan & Bybee, 1999	Randomized controlled	<i>Content</i> 10-week programme paired participants with trained advocates <i>Recruitment</i> Abused women's shelter programmes <i>n</i> = 278 <i>Measure(s)</i> CES-D	Decreased depressive symptoms at two-year follow-up	$p < 0.001$ by multivariate analysis of variance	Poor generalizability since majority of participants were ethnic minorities/low income and had resided in DV shelters Advocates were volunteer college students – poor replication feasibility

SCID: Structured Clinical Interview for DSM-III-R36; BDI: Beck Depression Inventory; CES-D: Centre for Epidemiological Studies – Depression Scale