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Socioeconomic status in childhood and the lifetime risk of major depression

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Background Major depression occurs more frequently among people of lower socioeconomic status (SES) and among females. Although the focus of considerable investigation, the development of SES and sex differences in depression remains to be fully explained. In this study, we test the hypotheses that low childhood SES predicts an increased risk of adult depression and contributes to a higher risk of depression among females.

Methods Participants were 1132 adult offspring of mothers enrolled in the Providence, Rhode Island site of the US National Collaborative Perinatal Project between 1959 and 1966. Childhood SES, indexed by parental occupation, was assessed at the time of participants' birth and seventh year. A lifetime history and age at onset of major depressive episode were ascertained via structured interviews according to diagnostic criteria. Survival analyses were used to model the likelihood of first depression onset as a function of childhood SES.

Results Participants from lower SES backgrounds had nearly a twofold increase in risk for major depression compared to those from the highest SES background independent of childhood sociodemographic factors, family history of mental illness, and adult SES. Analyses of sex differences in the effect of childhood SES on adult depression provided modest support for the hypothesis that childhood SES contributes to adult sex differences in depression.

Conclusions Low SES in childhood is related to a higher risk of major depression in adults. Social inequalities in depression likely originate early in life. Further research is needed to identify the pathways linking childhood conditions to SES differences in the incidence of major depression.

Keywords Depression, socioeconomic status, life course, sex, mental health, social inequalities

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Epidemiological investigations have consistently demonstrated an increased risk of depression among individuals of lower socioeconomic status (SES)^{1–3} and among females.^{4–6} Still, many questions remain about the origins of these differential risks for depression.^{7,8} Mounting evidence of the long-term relation between early childhood conditions and the onset of depression raises the concern that SES differences in depression among adults originate during childhood.^{9–13} There is also reason to believe that the impact of such adversity may be stronger for females than for males.^{14,15}

Previous investigations of the long-term effects of childhood SES on depression are limited by the use of retrospective reports of the childhood environment^{13,16,17} and symptom scales of current psychological distress rather than a lifetime diagnosis of depression.^{11,18} Retrospective reports of childhood conditions are subject to measurement error that may be exacerbated by psychopathology,^{19,20} while the analysis of current levels of psychological distress confounds the onset of depression with its recurrence.¹³ In this study, we present data on the prospective association between childhood SES and the first-time occurrence of a major depressive episode in a birth cohort ascertained from 1959 to 1966 and followed for an average of 29 years.

Methods

The Providence National Collaborative Perinatal Project (NCP) Follow-up Study

Subjects were offspring of mothers enrolled in the Providence, Rhode Island site of the National Collaborative Perinatal Project

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(NCPP; described in detail by Niswander and Gordon²¹). Briefly, the NCPP was a multi-site cohort study which involved the prospective observation and examination of over 50 000 pregnancies through the first seven years of life. Subject recruitment occurred between 1959 and 1966. The NCPP sampling plan differed by site; in Providence, obstetric patients at the participating hospital were randomly selected for inclusion in the study. On average, one out of two patients was chosen; the exact sampling fraction of patients was varied in order to recruit a predetermined number of subjects during each month of enrolment. At the conclusion of the study 4140 pregnancies were enrolled.

Of the 4140 Providence NCPP births, 1780 were selected for follow-up. Selection occurred in two separate phases; in each, a stratified random sample was drawn from the entire cohort to investigate the association between early life factors and adult psychiatric disorders. During phase one, initiated in 1984, 995 eligible subjects with and without pregnancy/delivery complications were selected.²² In the second phase, initiated in 1996, 1056 subjects with and without potential learning disabilities were selected.²³ Adult follow-up interviews were conducted when the subjects were between the ages of 18 and 39. Those individuals who were sampled during the first phase of the study were 18 to 27, whereas those in the second phase were between 30 and 39 years old. There was some overlap ($n = 275$) between the first- and second-phase samples; however, information from only one interview per subject was used in the present investigation. For participants in both phases, phase-two interviews were used unless depression had been reported at the initial (phase-one) assessment, in which case the earlier information was used.

Measures

Childhood socioeconomic status

Childhood SES was based on parental occupation, and was assessed during pregnancy and again at the age-7 interview. On both occasions, occupation was classified as either manual or non-manual according to the 1960 US Census categories.²⁴ Subjects from two-parent households (75.3% of the sample) were assigned to the higher occupational category of both parents, whereas those from single-parent households (24.7% of the sample) were assigned to the occupational category of the parent with whom they were living. Subjects whose parents were not in the paid labour force or who were living in an institutional setting at either or both childhood assessments were categorized as 'not employed/other'.

Depression

Lifetime diagnosis and age at onset of major depressive episode were assessed using the Diagnostic Interview Schedule (DIS) at the time of the adult follow-up interview. The DIS, used widely in community samples, has satisfactory psychometric properties for depression,²⁵⁻²⁷ and was administered by trained, reliable interviewers.²⁸ During the first phase of the follow-up study, diagnoses were based on DSM-III criteria,²⁹ whereas in the second phase, begun in 1996, a revised version of the DIS was used following DSM-IV criteria.³⁰ The analyses presented here combine DSM-III and DSM-IV diagnoses of major depressive episode which are similar although not identical. Both

diagnostic systems require the presence of at least five of the following symptoms concurrently for ≥ 2 weeks: depressed mood, loss of interest or pleasure, weight or appetite changes, sleep disturbance, psychomotor changes, fatigue, guilt, trouble concentrating or thinking, and suicidality. In DSM-III, depressed mood is a required symptom, whereas in DSM-IV, either depressed mood or loss of interest is required. In addition, DSM-IV criteria include a clinical impairment criterion and allow for a diagnosis of depression following a period of bereavement that persists for longer than 2 months. Depressive symptoms were assessed on a lifetime basis, and the age at first depressive episode was determined by asking respondents how old they were when they experienced multiple depressive symptoms for a period of ≥ 2 weeks.

Changes in the DSM diagnostic criteria for depression appear to have little impact on the identification of depressed cases in community samples according to a longitudinal study of depression conducted by Eaton *et al.*³¹ In that study, the subset of participants identified as depressed was virtually identical when DSM-III and DSM-IV diagnostic criteria were applied. We examined the concordance of DSM-III and DSM-IV diagnoses of depression in a subset of respondents in the present study who received the DSM-IV version of the DIS ($n = 574$); this was possible because the DIS for DSM-IV contains the items necessary for determining both DSM-III and DSM-IV depression. The agreement between both diagnostic systems was high ($\kappa = 0.79$, per cent agreement = 90.3%). Of note, the results of the analyses did not change when we re-analysed the data applying a DSM-III diagnosis of depression to the entire sample.

Statistical methods

We used the method of Kaplan and Meier³² to test for differences in the lifetime risk of depression in relation to childhood SES. Subsequently, discrete-time survival analysis was used to model the retrospectively reported age at depression onset; respondents without a lifetime diagnosis of depression were censored at the age of follow-up, thereby accounting for the fact that subjects were interviewed at different ages. The discrete-time survival model, proposed by Cox,³³ is used for the analysis of time-to-event data (i.e. age at depression onset) that are recorded in discrete intervals (i.e. years; described in detail by Efron³⁴). Regression coefficients were exponentiated and are interpreted as the odds of initial onset of depression. We accounted for the stratified sampling of respondents selected for the study by including a set of indicator variables representing the initial study selection factors (i.e. history of pregnancy or delivery complications, potential learning disabilities at age 7) in all survival models. In addition, we controlled for the following parental and respondent characteristics in adjusted survival models. Family history of mental disorders prior to the birth of the child was controlled for because of the increased risk for depression among offspring of depressed parents.³⁵ This was determined by the mother's report upon enrolment of whether she, the subject's father, or the subject's siblings had ever received treatment for emotional or behavioural problems. We also controlled for maternal age and single-parent status at the time of the child's birth, the respondent's age at interview, sex, and race/ethnicity. The number of years of educational attainment

of participants in the adult follow-up studies, coded as 0–9, 10–11, 12, or 13+, was included in survival models to control for adult SES. Educational attainment is the preferred indicator of adult SES in this sample because at younger ages other indicators such as income and occupation are less likely to reflect individuals' attained SES; approximately one-third of participants were aged ≤ 25 at follow-up. All analyses were conducted using the SAS program.³⁶

Results

Characteristics of the sample

The demographic characteristics of the 1780 subjects selected for follow-up are shown in the first column of Table 1. Of these, 1267 were successfully located and interviewed, and 1132 had complete data for all variables included in the analyses. These 1132 participants comprised the analysis sample for the present study. The demographic characteristics of the analysis sample, shown in the second column of Table 1, are virtually identical

to those of the selected sample. Slightly more than half of the analysis sample was male (51.9%), and the majority were White (72.2%). The mean age of subjects at the time of the follow-up interview was 29.0 (standard deviation: 5.7; range: 18–39). The majority of respondents (76.5%) had completed ≥ 12 years of education.

During their childhood, the occupation of most respondents' parents was manual, both upon enrolment (61.9%) and at the age-7 interview (52.9%). The cross-classification of respondents by their parents' occupation during early childhood is shown in the last five rows of Table 1. Of the 1132 subjects included in the analyses, the parental occupations of 39.4% and 18.6% were classified as manual and non-manual, respectively, at both childhood time points, whereas for 20.8%, parental occupations alternated between manual and non-manual (11.4% manual at birth and non-manual at age 7; 9.4% non-manual at birth and manual at age 7). The participants in the 'Not employed/Other' category (21.3%) were subjects whose parents were not in the paid labour force either at the time of the child's birth ($n = 65$),

Table 1 Characteristics of National Collaborative Perinatal Project (NCPP) participants selected for follow-up and included in the analysis sample

	Selected sample ($n = 1780$) ^a	Analysis sample ($n = 1132$)
<i>Demographic characteristics</i>		
Sex		
Male	54.0%	51.9%
Female	44.3%	48.1%
Race/ethnicity		
White	67.5%	72.2%
Non-White	21.5%	27.8%
Educational attainment (years)		
0–9		9.6%
10–11		13.9%
12		36.1%
13+		40.4%
Age at adult follow-up interview (years)		
18–22		18.1%
23–27		23.1%
30–34		39.8%
35–39		19.1%
<i>Childhood socioeconomic status</i>		
Occupational status at birth		
Not employed	7.9%	7.7%
Manual	60.8%	61.9%
Non-manual	26.4%	30.4%
Occupational status at age 7		
Not employed/other	14.3%	15.6%
Manual	48.5%	52.9%
Non-manual	25.9%	31.5%
Parental occupation at birth and age 7		
Birth	Age 7	
Manual	Manual	35.3%
Not employed/Other		18.7%
Manual	Non-manual	9.9%
Non-manual	Manual	7.9%
Non-manual	Non-manual	14.0%

^a Percentages in this column do not total 100% due to missing data.

at the age-7 interview ($n = 113$), or on both of these occasions ($n = 19$). Forty-four were respondents living outside of the home at the age-7 interview.

The lifetime risk of major depression in the sample (i.e. the per cent of respondents who met diagnostic criteria for a major depressive episode at any point in their life) was 24.5% ($n = 277$), and varied significantly by age at interview, sex, and race/ethnicity. As would be expected, the lifetime risk of depression was higher among those subjects who were interviewed at older ages; 10.7% of subjects interviewed when they were 18–27 years old met lifetime diagnostic criteria for depression, whereas among subjects interviewed between ages 30–39 years, the lifetime risk was 34.1% ($\chi^2 = 13.4$, d.f. = 1, $P < 0.001$). In addition, the lifetime risk of depression was higher among women (27.9%) than men (21.3%; $\chi^2 = 15.9$, d.f. = 1, $P < 0.001$), and among Whites (26.6%) than non-Whites (19.1%; $\chi^2 = 6.0$, d.f. = 1, $P = 0.014$). These demographic correlates of depression are consistent with previous population-based studies of psychiatric disorders, although the lifetime risk of depression in this sample is somewhat higher than has been reported elsewhere (i.e. 17.5% in the National Comorbidity Survey).³⁷

Childhood socioeconomic status and the lifetime risk of depression

The lifetime risk of depression varied significantly according to the occupational level of respondents' parents at the time of their birth and age 7 ($\chi^2 = 9.3$, d.f. = 4, $P = 0.054$). The lifetime risk of depression among respondents from the highest socioeconomic background (non-manual parental occupation at the subject's birth and age 7) was 17.1%, whereas in the other four categories of parental occupation, the lifetime risk of

depression ranged between 24.9% and 27.1% (Table 2, Column 1).

Results of survival analyses of depression onset are presented in the remaining columns of Table 2. Odds ratios (OR) and 95% confidence interval (CI) are shown for each category of parental occupation relative to the highest category. In the unadjusted model (Model I), the risk of depression was higher among individuals from lower socioeconomic backgrounds relative to individuals whose SES was in the highest category at birth and age 7; OR for each of the four occupational categories were significantly greater than 1. After childhood control variables were added (Model II), lower parental occupation remained significantly associated with depression onset ($\chi^2 = 12.9$, d.f. = 4, $P = 0.012$). In addition, female sex was significantly related to the risk of depression (OR = 1.83; 95% CI: 1.43–2.35; $\chi^2 = 23.3$, d.f. = 1, $P < 0.001$), as was a positive family history of mental illness (OR = 1.69; 95% CI: 1.07–2.65; $\chi^2 = 5.2$, d.f. = 1, $P = 0.023$).

In the final model (Model III), we added respondents' attained SES, indexed by their educational attainment. Parental occupation (childhood SES) remained significantly associated with depression ($\chi^2 = 9.6$, d.f. = 4, $P = 0.048$), as did female sex and a family history of mental illness. Consistent with expectation, educational attainment was inversely related to depression risk ($\chi^2 = 7.8$, d.f. = 3, $P = 0.050$): lower levels of education were associated with higher risks of depression independent of childhood SES and the other sociodemographic variables in the model. The same pattern of associations held when we re-estimated Model III excluding subjects that were interviewed below the age of 26. This sensitivity analysis was done because of the difficulty in accurately measuring attained SES for younger individuals.³⁸

Table 2 Childhood socioeconomic status and the lifetime risk of major depression

Lifetime risk of depression			Discrete-time survival models of the age at depression onset ^a					
			Model I Unadjusted		Model II ^b +Childhood controls		Model III ^{b,c} +Adult SES	
			OR	95% CI	OR	95% CI	OR	95% CI
Respondent's parental occupation at birth and 7 years								
Birth	Age 7							
Manual	Manual	26.5%	1.75 ^c	(1.20–2.55)	1.87 ^c	(1.28–2.75)	1.71 ^c	(1.15–2.55)
Not employed/Other		24.9%	1.75 ^c	(1.15–2.66)	1.88 ^c	(1.21–2.91)	1.67 ^d	(1.06–2.63)
Manual	Non-manual	27.1%	1.97 ^c	(1.23–3.15)	2.23 ^c	(1.37–3.61)	2.07 ^c	(1.27–3.37)
Non-manual	Manual	26.4%	1.66 ^d	(1.01–2.74)	1.76 ^d	(1.06–2.91)	1.69 ^c	(1.02–2.81)
Non-manual	Non-manual	17.1%	referent		referent		referent	
$\chi^2_4 (P)$		9.3 (.054)	10.4 (.034)		12.9 (.012)		9.6 (.048)	
Respondents' own educational attainment (years)								
0–9							1.71 ^d	(1.15–2.55)
10–11							1.27	(0.86–1.89)
12							1.05	(0.78–1.40)
13+							referent	
$\chi^2_3 (P)$							7.8 (0.050)	

^a All models include indicator variables for the study selection factors.

^b Also controlling for maternal age and single parent status at the time of the respondent's birth, race/ethnicity, sex, family history of mental illness, and age at follow-up interview.

^c Also controlling for adult educational attainment.

^d $P < 0.05$.

^e $P < 0.01$.

Childhood socioeconomic status, sex, and adult depression

We tested for sex differences in the effect of parental occupation on subsequent depression by adding a sex by parental occupation interaction to Model III; this was not statistically significant. Using the regression coefficients from the interaction term, we then examined whether childhood SES contributed to the higher lifetime risk of depression among females than males. In the aggregate, females were 1.83 times more likely than males to meet diagnostic criteria for a major depressive episode (95% CI: 1.43–2.35). However, there was evidence of effect modification such that sex differences in adult depression were most pronounced among individuals from lower SES backgrounds. The odds of depression among females compared to males at the lowest level of childhood SES (i.e. manual occupation at birth and age 7) were 2.12 (95% CI: 1.45–3.09; $\chi^2 = 15.2$, d.f. = 1, $P < 0.001$), whereas among individuals from the highest SES background (i.e. non-manual occupation at birth and age 7), this OR was 1.69 (95% CI: 0.87–3.29; $\chi^2 = 2.4$, $P = 0.124$). The odds of depression for females compared to males at each level of parental occupation are shown in the first column of Table 3.

As the survival analyses used here employ non-linear (i.e. multiplicative) models, the interaction term just described tests for sex differences in the odds of depression across categories of childhood SES. We investigated the possibility of an interaction between sex and childhood SES on an additive scale by testing for differences in the probabilities of depression among females and males at each level of parental occupation.³⁹ This was done by comparing the female-male risk differences in depression by childhood SES (Columns 3–6, Table 3). Consistent with the analyses of female-male differences in the odds of depression, female-male differences in the probabilities were more pronounced among individuals from lower SES backgrounds. For example, the lifetime risk of depression among females in the category of manual parental occupation at their birth and age 7 was 31.8%, compared to 21.4% among males, resulting in a risk difference of 10.4% (95% CI: 2.2–18.6). Female-male risk differences in the other categories of parental occupation were lower and not significantly different from 0. Risk differences adjusted for the full set of covariates included in the

survival models were 16.8% in the manual/manual category (95% CI: 9.1–24.5), 12.9% in the not employed/other category (95% CI: 2.5–23.3), 2.8% in the manual/non-manual category (95% CI: –11.6–7.2), 11.9% in the non-manual/manual category (95% CI: –3.8–27.6), and 10.9% in the non-manual/non-manual category (95% CI: –0.2–22.0).

Discussion

Limitations

This study is based on subjects recruited at a single location—Providence, Rhode Island—who were born during a relatively narrow range of time (i.e. 1959–1966). As noted above, the lifetime prevalence of major depressive episode in this sample, 24.5%, is also higher than in a nationally representative study of psychiatric disorders in the US i.e. 17.5% in the National Comorbidity Survey.³⁷ Therefore, the results reported here may not extend to populations in other areas, and the long-term effects of childhood SES that we observed may be limited to the period covered by this study. However, the finding that childhood conditions have long-term consequences for adult mental health is consistent with studies conducted in other geographical locations and time periods in the US,^{13,40,41} Europe,^{10–12} and elsewhere.⁴² In addition, the high prevalence of childhood poverty,⁴³ combined with reports that depression rates are increasing among younger individuals,^{44,45} suggests that childhood disadvantage continues to have long-term mental health consequences. An additional limitation of this study is the use of self-reports of mental illness in the family rather than the direct assessment of family members. This raises the concern that we were not able to fully control for family history.

Our findings are further constrained by the reliability of the DIS; in early psychometric studies of the DIS, depression was underdiagnosed by lay interviewers compared with psychiatrists.⁴⁶ In addition, the ability of the DIS to reliably assess the age at symptom onset is doubtless constrained by human memory.^{47,48} However, research indicates that the reliability of the DIS age at onset questions for depression lies within an acceptable range.^{27,49} For example, Wittchen *et al.* conducted a test-retest study of the DIS age at onset questions for depression and found

Table 3 Childhood socioeconomic status and sex differences in adult depression

		Adjusted odds of depression for females versus males ^a		Lifetime risks of depression among females and males and corresponding risk differences stratified by parental occupation			
		OR	95% CI	Females	Males	Risk difference ^b	95% CI
Respondent's parental occupation at birth and 7 years							
Birth	Age 7						
Manual	Manual	2.12 ^c	(1.45–3.09)	31.8%	21.4%	10.4% ^c	(2.2–18.6)
Not employed/Other		1.83 ^d	(1.08–3.10)	28.6%	20.9%	7.7%	(–3.1–18.5)
Manual	Non-manual	1.22	(0.62–2.43)	26.9%	27.3%	–0.4%	(–16.0–15.3)
Non-manual	Manual	1.88	(0.88–4.02)	29.2%	24.1%	5.0%	(–11.9–22.0)
Non-manual	Non-manual	1.69	(0.87–3.29)	18.6%	15.7%	2.9%	(–7.3–13.1)

^a Odds ratio from a discrete-time survival model predicting the age at depression onset controlling for study selection factors, maternal age and single-parent status at the time of the respondent's birth, race/ethnicity, family history of mental illness, age at follow-up interview, sex, adult SES (educational attainment), and the interaction of sex with parental occupation.

^b Lifetime risk of depression among females minus lifetime risk of depression among males.

^c $P < 0.01$.

^d $P < 0.05$.

that the intraclass correlation between the two assessments was between 0.49 and 0.77.²⁷ In an analysis of the one-year re-interview component of the Epidemiologic Catchment Area Study, Gilman and Abraham reported that the correlation between two assessments of the age at depression onset was 0.87.⁵⁰ Thus, while the reliability of the DIS onset data is less than perfect, previous studies suggest that it can adequately assess the timing of symptom onset. We investigated the sensitivity of our results to potential problems with the onset information by re-analysing the data without the age at onset data. This was done by estimating standard logistic regression models of the lifetime presence/absence of major depressive episode. Childhood SES remained significantly associated with adult depression independent of adult SES, with OR in the same range (1.72 to 2.35 in the fully adjusted model) as those reported above.

Childhood socioeconomic status and adult depression

Bearing in mind these limitations, this study found that lower childhood SES, indexed by parental occupation, was significantly related to the development of major depression. Independent of the adult educational attainment of respondents, respondents from lower SES backgrounds had a risk of depression that was between 1.69 to 2.07 times higher than those from the highest SES background. The results of this study support the hypothesis that childhood SES is related to adult mental health independent of life course SES trajectories that begin early in life.¹⁸

Our results, based on a population-based sample that was not selected for the presence of a psychiatric disorder, are in agreement with previous studies of the childhood antecedents of adult depression, yet are free of many limitations of earlier studies such as a cross-sectional design and the use of symptom scales rather than structured diagnostic interviews to assess the presence of major depression on a lifetime basis. While the domains of childhood SES that predict the onset of depression vary somewhat across studies,^{9,12,51} there is overwhelming consistency in the literature that low SES is inversely associated with the risk of depression and that socioeconomic disadvantage precedes the onset of depression, thereby supporting the hypothesis that SES has a causal association with major depression.^{2,51}

Despite substantial evidence of the inverse relation between SES and depression, the underlying mechanisms are not fully understood. Researchers have shown SES to be related to psychological factors that predict depression.^{52,53} Mirowsky and Ross proposed that a sense of alienation and a loss of control over one's life, which is more common among socially disadvantaged groups, contribute to social inequalities in depression.⁵⁴ Similarly, Link *et al.* reported that individuals in occupations characterized by low levels of control have a heightened risk of depression.⁵⁵ A limitation of these theories for interpreting the results of the present study is that they primarily address the effects of adult socioeconomic conditions on adult mental health. In light of our findings, combined with those of other investigators,^{9,12,51,56} it is apparent that a developmental perspective is needed to understand the genesis of social inequalities in depression.^{57,58} A developmental approach would be concerned not only with the presence of social adversity but with the timing of such adversity across multiple stages of the life course.

During early development, the period covered by the present study, disadvantaged social environments may have particularly adverse consequences for long-term mental health because of their effects on psychological development.⁵⁹ Children in disadvantaged situations may acquire less control over their environment (i.e. learned helplessness⁶⁰) and may develop difficulties in forming intimate relationships (attachments^{61,62}); both of these factors may increase children's vulnerability to depression throughout the life course. In addition, individuals from disadvantaged backgrounds may be more likely to experience stressful life events and be less capable of coping with such events when they occur.⁵² Other potential mediators of this association include material hardship, family disruption, strained social relationships, and poor physical health, each of which is itself related to depression.⁶³

Childhood socioeconomic status and adult sex differences in depression

We investigated two related hypotheses regarding the potential interaction between childhood SES and sex. The first was whether the relation between childhood SES and depression was stronger among females than among males; the second was whether sex differences in adult depression varied by childhood SES. The results of our analyses do not support the first hypothesis, but do provide modest support for the second. Sex differences in adult depression were more pronounced among individuals from lower versus higher socioeconomic backgrounds. This is consistent with previous research showing that social and developmental factors are related to higher depression rates among females,^{64–66} that the association between SES and depression is stronger among females,^{14,15,67} and that the consequences of childhood disadvantage are more severe for females.^{68,69} As sex differences in depression typically emerge during puberty,^{70,71} social and physiological changes around the time of puberty may contribute to a depressogenic diathesis among females.^{66,72,73} If future studies show that early childhood conditions are indeed related to sex differences in adult depression, this would imply that the origin of such differences occurs well before the onset of puberty. It may also imply that if genetic factors confer an elevated risk of depression among females,⁷³ this risk may be exacerbated in the context of social disadvantage.

Conclusions

Low childhood SES is associated with a higher lifetime risk of depression among both males and females, and may also contribute to sex differences in depression. Our findings are consistent with substantial existing evidence that SES differences in depression originate early in life. As the continuities between childhood exposures and adult mental health outcomes doubtless depend on a series of intervening events,⁷⁴ an important line of further inquiry is the identification of pathways, especially modifiable pathways, that link early life experiences to social inequalities in adult mental health.^{75,76} This will require the repeated assessment of multiple domains of socioeconomic context and mental health status across the life course. Doing so will also allow researchers to study whether childhood factors have a similar influence on the recurrence and consequences of depression as on its initial onset.

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KEY MESSAGES

- The inverse socioeconomic gradient in major depression is one of the most persistent findings in psychiatric epidemiology. Still, many questions remain about the origin of socioeconomic differences in adult depression.
- This study examined the risk that socioeconomic status (SES) during the first seven years of life confers on the occurrence of depression in a birth cohort established between 1959 and 1966 and followed prospectively for an average of 29 years.
- Participants from low SES backgrounds had a significantly increased risk of depression. This risk persisted after controlling for maternal age and single-parent status at birth, sex, race/ethnicity, a family history of mental illness, age at interview, and adult SES.
- Further research is needed to characterize the pathways linking early childhood conditions to adult mental health.

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