

## Article

# Does perceived financial strain predict depression among young women? Longitudinal findings from the Southampton Women's Survey

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## ABSTRACT

**Background** Social and financial environment has an influence on the incidence of depression. We studied perceived financial strain as a risk factor for development of depression among a large cohort of young women in Southampton, UK.

**Methods** We recruited a large number of young women in Southampton in the Southampton Women's Survey, a longitudinal study looking at factors influencing the health of women and their offspring. Women were asked to complete a baseline questionnaire, which included the GHQ-12 (an assessment of mental health), as well as questions on perceived financial strain and past history of depression. They were followed up two years later through their general practitioner (GP) records for evidence of incident mental illness.

**Results** A total of 7020 women completed the baseline questionnaire including the GHQ-12. Of these, 5237 (74.6%) had records available for follow-up. Among those developing depression, there was a higher proportion receiving benefits, and a higher level of perceived financial strain. There were also modest elevations in perceived stress, and poorer levels of educational attainment. Among women not depressed at baseline, and with no previous history of depression, those in receipt of state benefits at baseline had a significantly elevated risk of developing the disorder – hazard ratio 1.61 (95% confidence interval (CI) 1.13–2.3). The risk associated with perceived financial strain was 2.16 (95% CI 1.14–4.11), but this did not remain statistically significant after adjustment was made

for receipt of benefits, educational qualification, and perceived stress.

**Conclusion** Financial hardship as evidenced by receipt of benefits is a strong independent predictor for the development of depression. Although perception of financial strain is also a predictor for incident depression, the risk associated with this

subjective characteristic does not remain significantly elevated after adjustment. Future studies of the aetiology of depression should incorporate ascertainment of actual financial status.

**Keywords:** depression, finance, women

## Introduction

Depression, usually mixed with anxiety, has a high prevalence in the community. Various studies have shown that the point prevalence rate of major depression is about 2–5% in the general population.<sup>1–3</sup> The lifetime rate of major depression is probably about 10–20%.<sup>4</sup> The economic and social burden of dealing with this common disease is considerable: up to 20% of all consultations in UK general practice are concerned with common mental disorders, and depression is probably the commonest single cause for days lost to work. Patients affected with depression have increased mortality rates and significant impairments in physical and social functioning.<sup>5</sup> There has been considerable interest in the effects of the social environment, since it is potentially modifiable and thus might allow interventions to reduce the prevalence of depression. Depression does seem to be more common among those with a poor standard of living, independent of occupational social class.<sup>6</sup> It is uncertain whether this is due to a higher incidence or because of more-prolonged disease, caused by failure to recover. Unemployment appears to be a strong risk factor.<sup>6,7</sup> Some papers have suggested that the effects of unemployment and poverty on mental health may be mediated or modified by perceived financial strain,<sup>8,9</sup> and, in fact a paper by Weich and Lewis suggests that perceived financial strain is a better independent predictor of future psychiatric morbidity than either of these factors.<sup>8</sup> Income, *per se*, is rather a weak predictor of depression,<sup>10,11</sup> and it would appear that perceived financial strain may reflect other measures such as indebtedness and anxiety.

We studied perceived financial strain and incident depression among a large cohort of young women living in Southampton, UK. By collecting general practice record data on the development of depression prospectively, we have sought a causal relationship between perceived financial strain at baseline and development of depression over two years' follow-up. We have used multivariate analysis to determine whether perceived financial strain is an independent predictor of depression in the absence of other, more objective, indicators of socio-economic problems.

## Methods

The Southampton Women's Survey (SWS) was established in 1998 to study young women in Southampton of child-bearing age and then follow them through any subsequent pregnancy. The aim was to assess the influence of maternal factors operating before and during pregnancy on the growth and development of the fetus and subsequently of the child. Between 1998 and 2002, 12 500 women, aged 20–34 years, were recruited via their general practitioners (GPs) by scrutiny of GP lists, and sending a written invitation to all women aged 20–34 years, unless specifically excluded as unsuitable by the GP. Those who agreed were interviewed in their own homes. They provided information on diet, body composition, socio-economic circumstances, physical activity and lifestyle. Full details of the survey have been described elsewhere.<sup>12</sup> From 2 March 2000, all SWS women were also asked to complete the GHQ-12 questionnaire,<sup>13</sup> with two additional questions to obtain information about perceived financial strain and whether or not the woman had ever received treatment for depression. We used the same measure of perceived financial strain as reported in the paper by the Weich and Lewis,<sup>8</sup> that is we asked 'how well would you say you are managing financially these days?' Responses to this question were categorised as: (1) living comfortably; (2) just about getting by; and (3) finding it difficult or very difficult.

These women were also asked for their written consent for their general practice medical records to be examined for evidence of depression in the two years following interview.

Two or more years after initial interview, the GP records were examined for evidence of incident symptoms of depression in the two years following interview. Data were collected by one of two researchers (AO and JB), who recorded depressive symptoms; treatment with antidepressants; referrals to counselling, psychology, or psychiatric services for depression; and/or hospital episodes of depression. The written text describing the symptoms was checked by a GP member of the research team (TK) to ensure it represented depression rather than

alternative mental health problems; anxiety symptoms in the absence of depression were not included.

At baseline we identified women as being depressed based on the score on the GHQ-12 questionnaire. For each of the two questions, there are four options in response. The two items indicating the least likelihood of depression were scored as 0 and the other two as 1. The scores were summed across the 12 questions, and those with a score of three or more were categorised as being potentially depressed at baseline (the GHQ is a screening instrument with good sensitivity for depression but is not specific and will also pick up anxiety and other mental health problems).<sup>13</sup>

We studied only those women who, according to the GHQ-12, were not depressed at baseline and who had never received treatment for mental health problems. We can say that any new diagnosis of depression in this group was likely to be truly incident and unlikely to be a recurrence or relapse of pre-existing disorder. Such a previous history might alter the relationship to the risk factors in which we are particularly interested since, for example, previous depression might impact on earning capacity and thus cause financial strain.

## Statistical analysis

Cox regression was performed to examine the risk of a new episode of depression in the two-year period following initial interview. The analysis was restricted to women who were not classified as depressed according to the GHQ-12 at baseline, and who were not identified in their general practice records as having received treatment for depression at the start of the follow-up period. Hazard ratios were calculated to examine the effect on depression of the risk factors of interest. We identified the following variables, from all those available in the questionnaire, as potential confounders of the relationship between perceived financial strain and depression: perception of stress, employment status, educational qualification status, receipt of benefits, socio-economic class, and age.

## Results

From 2 March 2000, 7210 women participated in the SWS and of these 7020 (97.4%) completed a GHQ-12 questionnaire. Two or more years later it was possible to examine the GP records for 5408 of these women (77%). For 497 women, follow-up was incomplete as they transferred to a different GP during the follow-up

period. One-hundred and seventy-one women were found to have been receiving treatment for ongoing depression at baseline and were dropped from the analysis. Thus, records were available for 5237 women (74.6%) for analysis of incident depression over the follow-up period.

Table 1 shows the baseline characteristics of participating women. The distribution of all factors considered at baseline assessment is comparable to the main SWS dataset. Previously, the SWS has been shown to be broadly representative of England and Wales as a whole.<sup>12</sup> There were higher levels of perceived stress, a higher proportion receiving benefits, generally lower qualification levels, and higher levels of perceived financial strain, among those developing depression.

The hazard ratios for women for development of depression, categorising perceived financial strain in three strata (living comfortably as baseline, just about getting by, and finding it difficult) are shown in Table 2. This table shows that although the crude hazard ratio suggested a positive relationship between perceived financial strain and development of depression, adjustment for potential confounders attenuated the association and it became non-significant. If perceived financial strain was divided into two strata (living comfortably and any degree of strain), the fully adjusted hazard ratio for development of depression was 1.17 (95% confidence interval (CI) 0.87–1.57).

Since we observed a strong positive association particularly between receipt of benefits and perceived financial strain, and since it is possible that perceived financial strain is on the causal pathway between receipt of benefits and incidence of depression, we also examined the relationship of incident depression to both these risk factors, with mutual adjustment for confounders. The results are shown in Table 3. The adjusted hazard ratios show that there was a positive relationship between receipt of benefits and depression, which is statistically significant (hazard ratio (HR) = 1.61, 1.13–2.30), but that this was not so with perceived financial strain, where the HR values are non-significant, and there was no significant trend within the strata.

## Discussion

Our results have shown that among this group of young women, there is no statistically significant independent effect of the variable 'perceived financial strain' on the risk of developing a new episode of depression, after adjusting for significant confounding factors. We have also shown that being in receipt

**Table 1** Basic data in depressed and non-depressed groups among women who were not classified as depressed at the baseline interview and who reported never having been treated for depression in the past

	Those without incident depression	Those with incident depression
<i>n</i> (% of whole group)	2549 (92)	212 (8)
Mean age at baseline (SD), years	28.4 (4.3)	28.3 (4.4)
Median follow-up time, days	729	360
Perceived stress, <i>n</i> (%)		
None	881 (35)	54 (25.5)
Slightly	1147 (45)	99 (47)
Moderately	342 (13)	42 (20)
Quite a lot	158 (6)	15 (7)
Extremely	18 (1)	2 (1)
Employment status (working last week), <i>n</i> (%)	2078 (82)	161 (76)
Qualification level, <i>n</i> (%)		
None	76 (3)	10 (5)
GCSE D–G	224 (9)	39 (18)
GCSE A*–C	641 (25)	72 (34)
A level	867 (34)	59 (28)
HND	144 (6)	11 (5)
Degree or above	581 (23)	21 (9)
Receiving benefits, <i>n</i> (%)	262 (10)	47 (22)
Woman's own social class, <i>n</i> (%)		
I	120 (5)	6 (3)
II	782 (34)	43 (22)
IIIN	910 (39)	94 (49)
IIIM	184 (8)	20 (10)
IV	280 (12)	23 (12)
V	36 (2)	6 (3)
Perceived financial strain, <i>n</i> (%)		
Living comfortably	1839 (72)	136 (64)
Just about getting by	646 (25)	65 (31)
Finding it difficult	63 (2)	10 (5)

SD, standard deviation

Note: numbers do not always total to the full number in each group due to missing values

of benefits is an independent predictor of the development of depression, even though the perception of being under financial strain is, unsurprisingly, strongly correlated with this factor.

The strengths of this study were that it was prospective in nature, and that it involved large numbers of patients. Furthermore, we included measures of possible existing or previous depression at baseline, in the form of the GHQ-12 and questions about past history. This enabled us to study incident

depression, and thus distinguish possible risk factors from those that are linked with increased duration of depression, and thus affect the prevalence figures. Equally, such a prospective study establishes without doubt the direction of any causality between financial strain and depression. A possible weakness is that we have information on incident depression only when it is recorded in the general practice medical records during the follow-up period, and it is possible that we have, therefore, missed some

**Table 2** Hazard ratios (95% CI) for perceived financial strain and depression among women who were not classified as depressed at the baseline interview and who reported never having been treated for depression in the past

Perceived financial strain (3 groups)	Crude hazard ratio	Hazard ratio adjusted <sup>a</sup> including benefits	Hazard ratio adjusted <sup>a</sup> excluding benefits
Living comfortably	1 (baseline)	1 (baseline)	1 (baseline)
Just about getting by	1.36 (1.01–1.83)	1.13 (0.83–1.53)	1.22 (0.90–1.64)
Finding it difficult	2.16 (1.14–4.11)	1.58 (0.82–3.05)	1.83 (0.96–3.49)
	$P_{\text{trend}} = 0.004$	$P_{\text{trend}} = 0.19$	$P_{\text{trend}} = 0.05$

<sup>a</sup> For qualifications and perceived stress**Table 3** Hazard ratios (95% CI) for incident depression in relation to perceived financial strain and receipt of benefits among women who were not classified as depressed at the baseline interview and who reported never having been treated for depression in the past

	Number	Number (%) with incident depression	Hazard ratio <sup>a</sup> (95% CI)	Mutually adjusted hazard ratio <sup>a</sup> (95% CI)
Perceived financial strain				
Living comfortably	1975	136 (7)		
Just about getting by	711	65 (9)	1.22 (0.90–1.64)	1.13 (0.83–1.53)
Finding it difficult	73	10 (14)	1.83 (0.96–3.49)	1.58 (0.82–3.05)
			$P_{\text{trend}} = 0.05$	$P_{\text{trend}} = 0.19$
On benefits				
No	2450	165 (7)		
Yes	309	47 (15)	1.74 (1.24–2.46)	1.61 (1.13–2.30)

<sup>a</sup> Adjusted for educational qualifications and perceived stress

cases. It is possible that this would differentially affect any relationship to perceived financial strain, if, for example, being a single parent of low socio-economic class resulted in reduced willingness to seek a GP's help for depression. This might then produce a false-negative result. However, one might expect this argument to apply also to being in receipt of state benefits, where we have, in fact, shown a positive association. Also our measures of potential risk factors rely on self-assessment and are not absolute (for example, the assessment of level of stress affecting health), and we did not ask for any absolute measure of income. It is certainly possible to earn relatively large amounts of money and still feel oneself to be financially under strain. Conversely, people on benefits may be quite happy with their income, if their lifestyle is relatively financially undemanding. However, the questions we have asked in the questionnaire are pragmatically useful to healthcare workers

trying to assess the liability to depression. Another weakness of our study is that we have found relatively small numbers of women with perceived financial difficulty, and thus the study is under-powered, leading to the possibility of a false-negative result.

This study concentrates on young women. Previous studies of this issue in the UK have included a wider age range of population.<sup>8,14</sup> Our results do not fully concur with these in that perceived financial strain at baseline was shown to be associated with both onset and maintenance of depression in both previous studies, although the measure of perceived financial strain differed between them. Other prospective studies from the US and also from Hong Kong, particularly among elderly people, have also suggested that perceived financial strain is an important predictor of the development of depression.<sup>15,16</sup> The question arises as to why our results differ from those in these papers. Although we have

not shown a statistically significant effect of perceived financial strain, there is a suggestion of an increased risk, and the hazard ratio for these women is virtually identical to that recorded by Weich and Lewis.<sup>8</sup> For example our results show a hazard ratio of 1.58 (0.82–3.05) after adjustment, whereas Weich and Lewis showed an adjusted odds ratios of 1.57 (1.19–2.07) for the incidence of depression, although the adjustment for confounders was different. In fact, the measurement of potential confounders differs between all the studies, and there are undoubtedly complex relationships between contributing factors such as actual income, social circumstances, educational attainment and receipt of benefits, for example. This makes it difficult to compare studies, especially those between countries with widely differing circumstances (e.g. Hong Kong and the UK). Also, the younger, female, age group in our study is probably important: perhaps the question about perception of financial strain is not so relevant to such people, in whom other social or lifestyle factors may predominate. For example, Brown has suggested that the lack of a confidant may be an important risk factor for episodes of depression in women.<sup>17</sup> Our results suggest that the more objective question: 'Are you in receipt of state benefits?' may offer a more robust predictor of the development of depression.

## Conclusion

We have not shown a statistically significant independent effect of perceived financial strain on the development of incident depression in a large group of young women from the Southampton area. However, in this study, being in receipt of state benefits is a strong independent predictor of depression. This is an objective measure of financial difficulty, and this finding suggests that future studies on the aetiology of incident depression should incorporate measures of actual income, as well as assessing perceived financial strain and educational attainment. In future, national studies involving much larger numbers of participants will probably be necessary, if any financial effects on incidence of depression are to be demonstrated.

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CONFLICTS OF INTEREST

None.

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