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The impact of tuition fees amount on mental health over time in British students

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ABSTRACT

Background Previous studies have shown a relationship between debt and mental health problems in students. This study aimed to examine the effect of differences in tuition fees amount on changes in mental health over time.

Methods A prospective cohort study followed 390 first-year British students who differed on their tuition fees level at 4 time points across their first 2 years at university. Participants completed measures of global mental health, depression, anxiety, stress, alcohol-related problems at up to four time points in their first two years at university. Mixed-factorial ANOVAs were used to assess the impact of tuition fees amount on changes in scores over time.

Results There was no difference based on fees at Time 1 for anxiety, stress, depression and global mental health. At Time 2, those charged £0–2.9k or £3–4k improved while those charged £8–9k stayed the same. However, this trend reversed by Times 3 and 4.

Conclusions Undergraduates mental health is partially affected by the level of tuition fees; however, the recent increase in tuition fees does not appear to have had a lasting impact at present.

Keywords debt, depression, financial stress, mental health, student, undergraduate

Introduction

In recent years, there has been an increasing demand for mental health services for students in the UK.[1] In the USA, research has suggested that up to 17% of students have depression,[2] and 12% an anxiety disorder.[3] Some research suggests that prevalence rates for mental disorders are similar in students and non-students,[3] while other suggests students have poorer mental health.[4] Students show high levels of drug and alcohol use, though levels may be similar to non-students of the same age.[3,5]

University may represent a high-risk time for students: as Reavley *et al.*[6] point out, students start university at a high-risk age for the onset of mental disorders. Exam pressure and not adjusting to the university environment have been shown to correlate with psychological stress and distress.[7,8] Mental health while at university is worse than pre-university levels, and worsens over time.[9–12] Andrews and Wilding[12] found that 9% of students with no symptoms of depression prior to university had become clinically depressed halfway through their degree.

Studies from a number of countries have shown that financial difficulties are related to poorer mental health[2,13–15] and higher levels of drug use[16,17] in students. In the UK, poor mental health in students has been linked to financial problems,[12,18,19] considering dropping out for financial reasons,[18,19] financial concern,[20] being in debt[4] and concern about debt.[21] English students also have poorer mental health than students from Finland where levels of student debt are lower.[20] A number of studies in the wider UK general population have shown a

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relationship between debt and mental health problems and substance dependence.[22–25]

Due to government legislation passed in 2010, tuition fees for students from England and Wales increased from just over £3k a year in 2011 to £6–9k a year in 2012, with a predicted average annual fee of £8360.[26] Most students will have these fees added to their loan rather than paid up front. As a result, debt upon graduation is predicted to double to £59k for English students starting in 2012.[26] Students from Scotland will pay nothing if they study in their own country, but up to £9k if they study elsewhere in the UK.[27] Those from Northern Ireland will pay £3.5k if they study at home or up to £9k if they study elsewhere.[27]

Given previous research demonstrating a relationship between debt, financial difficulties and poor mental health in students, the increase in tuition fees may represent a considerable public mental health problem. This research therefore aimed to use a prospective cohort study to assess the impact of different tuition fees amounts on changes in student mental health over time.

Method

Design

A prospective cohort study was used, following three cohorts which were charged different tuition fees amounts: £0–2.9k (i.e. Scottish students studying in Scotland), £3–4k (i.e. English and Welsh students at 2011 fees level) or £8–9k (i.e. English and Welsh students at increased 2012 fees level), across their first 2 years at university.

Standardized measures

Questions were completed online at four times 3–4 months apart across just over a year in participants first 2 years at university. For logistical reasons, questionnaires were completed at slightly different times for those starting university in 2011 compared with 2012. Time 1 was February–June 2012 for the 2011 cohort and October–December for the 2012 cohort. Time 2 was August–September 2012 for the 2011 cohort and February 2013 for the 2012 cohort. Time 3 was November–December 2012 for the 2011 cohort and May–July 2013 for the 2012 cohort. Time 4 was February 2013 for the 2011 cohort and November 2013–January 2014 for the 2012 cohort.

The following self-report standardized measures were used. Chronbach's alpha (α) is given for the current sample:

(i) Alcohol Use Disorder Identification Test (AUDIT)[28]: This is a 10-item scale developed to assess alcohol problems. The AUDIT has consistently been shown to have good psychometric properties[29] ($\alpha = 0.86$).

(ii) Clinical outcomes routine evaluation general population version (CORE-GP)[30]: This is designed to assess global mental health in non-clinical populations ($\alpha = 0.90$).

(iii) Seven-item-generalized anxiety disorder questionnaire (GAD-7)[31]: This is designed to measure symptoms of general anxiety, and has been found to detect generalized anxiety disorder with a sensitivity of 0.89 and a specificity of 0.82 ($\alpha = 0.91$).

(iv) Centre for epidemiological studies depression scale (CES-D)[32]: This questionnaire is designed for epidemiological research to measure depression in the general population ($\alpha = 0.95$).

(v) Perceived stress scale (PSS)[33]: This questionnaire measures global perceived stress ($\alpha = 0.91$).

Procedure

Every university students union in the UK was emailed and invited to forward on an email to first-year undergraduates about the research, or advertise via websites and social media. Of the 114 universities contacted, 46 advertised the survey for the 2011 cohort, and 44 advertised the survey for the 2012 cohort. Due to the method of recruitment, it is not known how many people saw the advert and therefore what the response rate was. The universities covered a wide spread in geographical area and ranking. The survey was advertised to students as a 'Student Mental Health Survey' examining whether factors such as 'finances, demographics and alcohol use' were related to mental health in students. The specific aim of the research looking at the impact of the level of tuition fees was not advertised, as this may have biased results. Eligible participants were first-year British undergraduate students starting university in 2011 or 2012.

Missing data and statistical analyses

For individual items on standardized measures, where any participants had completed 50% or more of the items for that measure, missing values were substituted with the mode. A factorial MANOVA was used to assess changes in scores over time and interactions with tuition fees. Some participants dropped out at Times 3 and 4, thus including all of the time points in one analysis would have reduced sample size. Therefore, separate analyses were conducted for each time point. A 2 (time point change) by 3 (£0–2.9k, £3–4k, £8–9k) design was used with CES-D, GAD-7, CORE, PSS and AUDIT scores as the dependent variables. Three separate factorial MANOVAs were conducted comparing changes Time 1–Time 2, Time 2–Time 3 and Time 3–Time 4. Data were analysed using SPSS 20 for Windows.

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Results

Participant characteristics

A total of 390 participants completed the survey at Times 1 and 2 and were included in the analysis. Of these, 77.9% ($n = 304$) were female, and 21.8% ($n = 85$) were male. Ages ranged from 17 to 57 with a mean of 19.8. Ethnicity was 90% ($n = 350$) white. In terms of part of UK lived in prior to University, 73.8% ($n = 288$) came from England, 3.1% ($n = 12$) from Wales, 20.8% ($n = 81$) from Scotland and 2.1% ($n = 8$) from Northern Ireland. A range of different degree types were present: 24.4% ($n = 95$) Humanities, 22.9% ($n = 89$) Human/Social Sciences, 21.1% ($n = 82$) Sciences or Engineering, 6.4% ($n = 25$) Business or Law, 6.2% ($n = 24$) Maths or Economics, 7.9% ($n = 31$) Medicine, Nursing or other health professions. Just over 1 in 10 of the sample (10.8%, $n = 42$) were mature students. In terms of annual tuition fees, 33.3% ($n = 130$) were charged £0–2.9k, 33.1% ($n = 129$) £3–4k and 33.6% ($n = 131$) £8–9k. The proportion of participants scoring above the cut-off point at Time 1 was 60.5% ($n = 399$) on the CES-D, 59.5% ($n = 229$) on the CORE-GP, 50.4% ($n = 195$) on the GAD and 39.2% ($n = 150$) on the AUDIT. Two hundred and twenty-five participants completed the survey at Time 3 and 176 at Time 4.

A multinomial logistic regression was used to see whether the tuition fees groups differed on any demographic variables. Comparing £0–2.9k with £3–4k, the only statistically significant difference was for the number from Scotland: $B = 3.38$, Wald = 9.83, $P < 0.01$. Specifically, there were more from Scotland in those charged £0–2.9k (60.8%, $n = 79$) compared with £3–4k (1.6%, $n = 2$), which is to be expected given the different fees in Scotland. Comparing £8–9k with £3–4k, there was a significant difference for Gender: $B = 0.8$, Wald = 4.83, $P < 0.05$, with more men in those charged £8–9k (26%, $n = 34$) compared with £3–4k (17.1%, $n = 22$). There was also a significant difference for Disability $B = 1.12$, Wald = 5.23, $P < 0.05$, with more people with a disability in those charged £8–9k (14.5%, $n = 19$) compared with £3–4k (7%, $n = 9$).

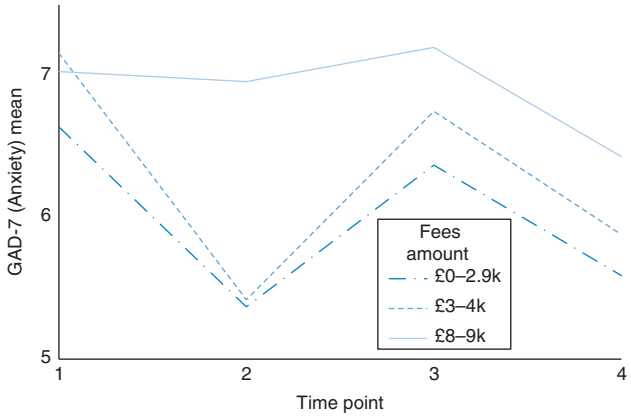

Fig. 1 Interaction between time and fees for GAD-7 (Anxiety).

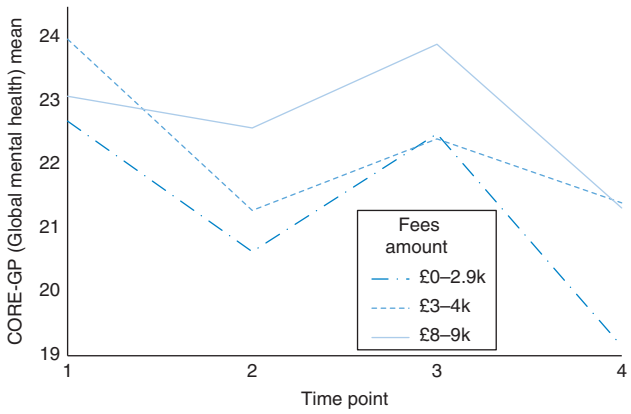

Fig. 2 Interaction between time and fees for CORE-GP (Global Mental Health).

Changes in mental health over time

Figures 1–4 show the changes in mean score over time for different fees groups for GAD-7 (Anxiety), CORE (Global Mental Health), CES-D (Depression) and PSS (Stress).

Time 1–Time 2 changes

Multivariate statistics (Roy's Largest Root) showed a significant effect of tuition fees $F(5,354) = 3.24$, $P < 0.01$; time $F(5,353) = 5.50$, $P < 0.001$ and time × tuition fees interaction $F(5,354) = 2.58$, $P < 0.05$.

Univariate statistics showed a significant main effect of time on the GAD-7 $F(1,357) = 19.23$, $P < 0.001$; CORE $F(1,357) = 12.99$, $P < 0.001$; CES-D $F(1,357) = 21.93$, $P < 0.001$; PSS $F(1,357) = 20.38$, $P < 0.001$. For all measures, there was a decrease in scores from Time 1 to Time 2. There

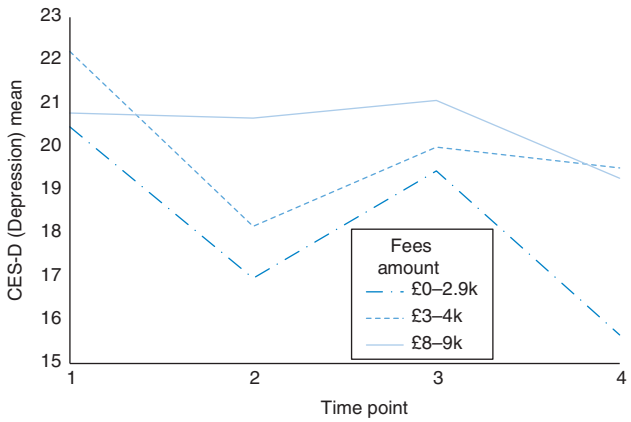

Fig. 3 Interaction between time and fees for CES-D (Depression).

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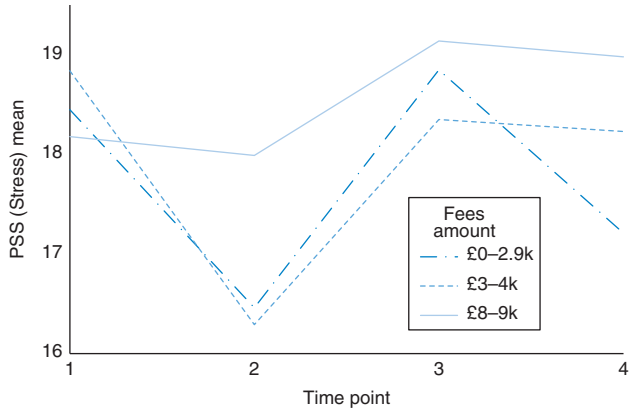

Fig. 4 Interaction between time and fees for PSS (Stress).

was no main effect of time on AUDIT scores $F(1,357) = 0.23$, $P > 0.05$.

There was a significant main effect of tuition fees on scores on the AUDIT $F(1,357) = 4.8$, $P < 0.01$, with scores being higher for £0–2.9k and £3–4k than £8–9k. There was no main effect of tuition fees on scores on the GAD-7 $F(2,357) = 1.27$, $P > 0.05$; CORE $F(2,357) = 0.33$, $P > 0.05$, CES-D $F(2,357) = 0.83$, $P > 0.05$ or PSS $F(1,357) = 0.25$, $P > 0.05$.

There was a significant time × tuition fees interaction for the GAD-7 $F(2,357) = 4.64$, $P < 0.01$; CORE $F(2,357) = 3.52$, $P < 0.05$; CES-D $F(2,357) = 5.213$, $P < 0.01$ and PSS $F(2,357) = 4.25$, $P < 0.05$. As Figs 1–4 show mental health symptoms decreased from Time 1 to Time 2 for those charged £0–2.9k and £3–4k, but stayed the same for those charged £8–9k. There was no significant time × tuition fees interaction for scores on the AUDIT $F(2,357) = 0.81$, $P > 0.05$.

Time 2–Time 3 changes

Multivariate statistics (Roy's Largest Root) showed a significant effect of time $F(5,218) = 4.66$, $P < 0.001$, but not tuition fees $F(5,219) = 1.48$, $P > 0.05$ or time × tuition fees interaction $F(5,219) = 1.54$, $P > 0.05$.

Univariate statistics showed a significant main effect of time on the GAD-7 $F(1,222) = 8.62$, $P < 0.01$; CORE $F(1,222) = 14.86$, $P < 0.001$, CES-D $F(1,222) = 8.25$, $P < 0.01$ and PSS $F(1,222) = 18.04$, $P < 0.001$. For all measures, there was an increase in scores from Time 2 to Time 3. There was no main effect of time on AUDIT scores $F(1,357) = 0.49$, $P > 0.05$.

There was no main effect of tuition fees on scores on any variables: GAD-7 $F(2,222) = 1.11$, $P > 0.05$; CORE $F(2,222) = 0.44$, $P > 0.05$; CES-D $F(2,222) = 0.56$, $P > 0.05$; PSS $F(2,222) = 0.39$, $P > 0.05$ or AUDIT $F(2,222) = 1.83$ $P > 0.05$.

There was a significant time × tuition fees interaction for the GAD-7 $F(2,222) = 3.17$, $P < 0.05$, with anxiety increasing over time for those charged £0–2.9k or £3–4k, but staying the same for those charged £8–9k. There was no significant time × tuition fees interaction for scores on the CORE $F(2,222) = 1.19$, $P > 0.05$; CES-D $F(2,222) = 2.96$, $P > 0.05$; PSS $F(2,222) = 1.3$, $P > 0.05$ and AUDIT $F(2,222) = 0.6$, $P > 0.05$.

Time 3–Time 4 changes

Multivariate statistics (Roy's Largest Root) showed a significant effect of time $F(5,155) = 2.98$, $P < 0.05$, but not tuition fees $F(5,156) = 0.471$ or time × tuition fees interaction $F(5,156) = 1.79$, $P > 0.05$.

Univariate statistics showed a significant main effect of time on the GAD-7 $F(1,159) = 4.97$, $P < 0.05$; CORE $F(1,159) = 12.23$, $P < 0.001$ and CES-D $F(1,159) = 5.71$, $P < 0.05$ with a significant decrease in scores for all variables. There was no significant effect of time for PSS $F(1,159) = 1.57$, $P > 0.05$ and AUDIT $F(1,159) = 2.61$, $P > 0.05$.

There was no main effect of tuition fees on scores on any variables: GAD-7 $F(2,159) = 0.36$, $P > 0.05$; CORE $F(2,159) = 0.48$, $P > 0.05$, CES-D $F(2,159) = 0.77$, $P > 0.05$; PSS $F(2,159) = 0.25$, $P > 0.05$ or AUDIT $F(2,159) = 0.62$ $P > 0.05$.

There was no significant time × tuition fees interaction for score on any of the variables: GAD-7 $F(2,159) = 0.01$, $P > 0.05$; CORE $F(2,159) = 1.18$, $P > 0.05$; CES-D $F(2,159) = 1.39$, $P > 0.05$; PSS $F(2,159) = 0.95$, $P > 0.05$ and AUDIT $F(2,159) = 0.99$, $P > 0.05$.

Impact of demographics

There were differences between those charged £8–9k and £3–4k on gender and disability which may account for the significant tuition fees × time interactions. This was examined by re-running the factorial MANOVAs with gender and disability instead of fees. There was no gender × time interaction for T1–T2 or T2–T3, or disability × time interaction for T1–T2 (details not given for sake of conciseness but are available on author contact). There was a significant disability × time interaction for T2–T3 for the GAD-7 $F(1,222) = 5.37$, $P < 0.01$ and CES-D $F(1,222) = 6.68$, $P < 0.05$. However, running the factorial MANOVA for T2–T3 with those with a disability excluded did not change the significant time × fees interaction for the GAD, suggesting the results were not due to demographic differences.

It is also possible that higher AUDIT scores for those charged lower fees were due to differences in nationality. A MANOVA analysed AUDIT scores at each time point by

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which part of the UK they came from (England, Wales, Scotland, Northern Ireland), with no significant differences (details available upon request).

Discussion

Main findings of this study

This study used a prospective cohort design to examine the impact of tuition fees amount on changes in mental health over time in British first-year undergraduate students. At Time 1, there were no significant differences in mental health between the different cohorts. However, differences became apparent at Time 2: while those who were charged lower fees had an improvement in anxiety, depression, stress and global mental health over time, those charged more stayed the same. Previous findings suggest that students with higher financial concern have a greater deterioration in mental health over time.[21]

However, at Times 3 and 4, the trend of worse mental health for those charged £8–9k had reversed so that there were no longer any differences based on fees. Though this seems at odds with previous research with student populations, other studies suggest that worry about debt[34] and financial strain[35] are more important than amount of debt *per se*. Those charged higher tuition fees may not be more worried or financially strained. The disappearance of a difference between cohorts at Time 3 may also represent adjustment to the situation: becoming used to the size of their student loan. Those charged less had higher scores for alcohol-related problems at Times 1 and 2, against research suggesting greater debt is related to greater alcohol problems.[23,24] This may simply be because those charged lower fees have more disposable income to spend on alcohol.

What is already known on this subject?

Epidemiological studies have shown a relationship between debt and mental health difficulties and substance dependence in the general UK population.[22–25] Previous research with British students has found that poor mental health is related to financial difficulties[18,19] and level of debt,[4] with greater financial concern predicting deterioration in mental health over time.[21]

What this study adds

This is the first prospective cohort study to examine the impact of tuition fees amount on changes in mental health over time in students, and the first time the public health impact of a large increase in tuition fees has been assessed. This study adds that those who were charged higher fees are less likely to have an improvement in their mental health in their first year at university. However, the increase in fees has had no lasting impact on mental health symptoms.

Limitations of this study

The sample size is larger than the only previous cohort study comparing mental health based on fees which compared 89 British students to 98 Finnish students;[20] however, the relatively high drop out at Times 3 and 4 led to a small sample size. The cohorts completed questionnaires at slightly different times of year and with slightly different lengths of time between time points. The sample used here may not be representative of the British undergraduate population, as it is heavily female, and those with mental health difficulties appeared more likely to take part. A previous study followed up students for 3 years;[21] however, a follow-up of this length is not possible due to the level of drop out.

Conclusion

Despite previous research documenting a relationship between debt and mental health problems in students, the considerable increase in tuition fees in England and Wales does not appear to have had a persistent impact on the mental health of students. From a public health perspective, there is little evidence that there will be an increase in the prevalence of mental health problems and demand for services in UK student populations as a result of the fees increase, though financial difficulties may be related to mental health at an individual level in this population.

However, there was a short follow-up in this study, and it is possible that concerns about debt might increase nearer to or after graduation. It has been estimated that, nearly three-quarters of those charged £9k, a year fees will fail to pay off their student loan before it is written off after 30 years.[36] Therefore, differences between those charged higher fees may not be become apparent for many years and ongoing monitoring of the prevalence of mental health problems in students and their relationship with debt is indicated. Health professionals should assess for financial difficulties in those with mental health problems,[37] and a form has been designed for this purpose,[38] which could be used by health professionals linked to higher education institutions. Similarly, debt charities and student unions providing students with financial advice could screen for mental health problems using brief self-report questionnaires such as the GAD-7[31] and the PHQ-9.[39]

Authors' contributions

The research design was developed by all authors. T.R. recruited participants and collected data. Data analysis was conducted by T.R. with input from P.E. and R.R. T.R. drafted the article with input from R.R. and P.E.

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Research ethics

Ethics approach was granted by the University of Southampton School of Psychology Ethics Committee (ID 4720).

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Conflict of interest

None declared.

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