**Original Paper**

**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 amounts 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 two years at university.Participants completed measures of global mental health, depression, anxiety, stress, alcohol-related problemsat two time points in their first year 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 whilst those charged £8-9k stayed the same. However this trend partially 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, Mental Health, Student, Undergraduate, Financial Stress.

**Introduction**

In recent years there has been an increasing demand for mental health services for students in the United Kingdom (UK) ([1](#_ENREF_1)). In the United States, Eisenberg et al reported a depressive or anxiety disorder in 15% of college students ([2](#_ENREF_2)). Blanco et al showed that 7% of students had major depression and 12% an anxiety disorder ([3](#_ENREF_3)). Overall prevalence rates for mental disorders were similar in students than non-students in this study ([3](#_ENREF_3)), though other research suggests students have poorer mental health than non-students ([4](#_ENREF_4)). A recent study of several thousand students in the US found depression in 17% and generalized anxiety disorder in 7% ([5](#_ENREF_5)). Students show high levels of drug and alcohol use, though levels may be similar to non-students of the same age ([3](#_ENREF_3), [6](#_ENREF_6)).

University may represent a high risk time for students: as Reavley et al point out, students start university at a high risk age for the onset of mental disorders ([7](#_ENREF_7)). Exam pressure and not adjusting to the university environment have been shown to correlate with psychological stress and distress in students ([8](#_ENREF_8), [9](#_ENREF_9)). Mental health while at university is worse than pre university levels, and worsens over time ([10](#_ENREF_10), [11](#_ENREF_11)), with poorer mental health for those in their final year ([12](#_ENREF_12)). [Andrews and Wilding (13](#_ENREF_13)) 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 ([5](#_ENREF_5), [14-16](#_ENREF_14)) and higher levels of drug use ([17](#_ENREF_17), [18](#_ENREF_18)) in students. In the UK specifically poor mental health in students has been linked to financial problems, considering dropping out for financial reasons and working outside of university ([19](#_ENREF_19), [20](#_ENREF_20)). [Jessop, Herberts (21](#_ENREF_21)) found financial concern predicted emotional problems, whilst [Carney, McNeish (4](#_ENREF_4)) found poorer mental health for students in debt. Cooke et al. ([22](#_ENREF_22)) found that students at all stages of study had poorer mental health if they were concerned about debt. Similarly [Andrews and Wilding (13](#_ENREF_13)) found that financial difficulties predicted depression. [Jessop, Herberts (21](#_ENREF_21)) also found that English students had poorer mental health than students from Finland where levels of student debt are lower ([21](#_ENREF_21)). A number of studies in the wider UK general population have also shown a relationship between debt and mental health problems, in particular depression, as well as substance dependence ([23-26](#_ENREF_23)).

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 £8,360 ([27](#_ENREF_27)). 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 ([27](#_ENREF_27)). Students from Scotland will pay nothing if they study in their own country, but up to £9k if they study elsewhere in the UK ([28](#_ENREF_28)). Those from Northern Ireland will pay £3.5k if they study at home or up to £9k if they study elsewhere ([28](#_ENREF_28)).

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 3 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 two years at university.

**Standardised Measures**

Questions were completed online at four times three to four months apart across just over a year in participants first two years at university. For logistical reasons questionnaires were completed at slightly different times for those starting university in 2011 compared to 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 to January 2014 for the 2012 cohort.

The following self-report standardised measures were used. Chronbachs alpha (α) are given for the current sample.

- Alcohol Use Disorder Identification Test (AUDIT) ([29](#_ENREF_29)): This is a 10 item scale developed to assess alcohol problems. The AUDIT has consistently been shown to have good psychometric properties ([30](#_ENREF_30)) (α=.86)..

- Clinical Outcomes Routine Evaluation General Population Version (CORE-GP) ([31](#_ENREF_31)): This is designed to assess global mental health in non-clinical populations (α=.90)

- 7 Item Generalized Anxiety Disorder Questionnaire (GAD-7) ([32](#_ENREF_32)): This is designed to measure symptoms of general anxiety, and has been found to detect generalized anxiety disorder with a sensitivity of .89 and a specificity of .82 (α=.91).

- Centre for Epidemiological Studies Depression Scale (CES-D) ([33](#_ENREF_33)): This questionnaire is designed for epidemiological research to measure depression in the general population (α=.95).

- Perceived Stress Scale (PSS) ([34](#_ENREF_34)): This questionnaire measures global perceived stress (α =.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 for the study 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 standardised measures, where any participants had completed 50% or more of the items for that measure, missing values were substituted with the mode for that item. A Factorial MANOVA was used to assess changes in scores over time and any 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 was analysed using SPSS 20 for Windows.

**Results**

**Participant characteristics**

A total of 390 participants completed the survey at times one and two 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. In terms of the proportion of participants who scored above the cut-off point on the standardised measures, at time one this 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. 225 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 to £3-4k, the only statistically significant difference was for the number from Scotland: B=3.38, Wald=9.83, *p*<.01. Specifically there were more from Scotland in those charged £0-2.9k (60.8%, n=79) compared to £3-4k (1.6%, n=2), which is to be expected given the different fees in Scotland. Comparing £8-9k to £3-4k there was a significant difference for Gender: B=0.8, Wald=4.83, *p*<.05, with more men in those charged £8-9k (26%, n=34) compared to £3-4k (17.1%, n=22). There was also a significant difference for Disability B=1.12, Wald=5.23, *p*<.05, with more people with a disability in those charged £8-9k (14.5%, n=19) compared to £3-4k (7%, n=9).

**Changes in Mental Health over Time**

Figures 1 to 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*<.01, time; *F*(5,353)=5.50, *p*<.001, and time\*tuition fees interaction; *F*(5,354)=2.58, *p*<.05.

Univariate statistics showed a significant main effect of time on the GAD-7; *F*(1,357)=19.23, *p*<.001, CORE; *F*(1,357)=12.99, *p*<.001, CES-D; *F*(1,357)=21.93, *p*<.001 and PSS; *F*(1,357)=20.38, *p*<.001. For all measures there was a decrease in scores from time one to time two. There was no main effect of time on AUDIT scores; *F*(1,357)=0.23, *p*>.05.

There was a significant main effect of tuition fees on scores on the AUDIT; *F*(1,357)=4.8, *p*<.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*>.05; CORE *F*(2,357)=0.33, *p*>.05, CES-D *F*(2,357)=0.83, *p*>.05 or PSS; *F*(1,357)=0.25, *p*>.05.

There was a significant time\* tuition fees interaction for the GAD-7; *F*(2,357)=4.64, *p*<.01, CORE; *F*(2,357)=3.52, *p*<.05, CES-D *F*(2,357)=5.213, *p*<.01 and PSS; *F*(2,357)=4.25, *p*<.05. As figures 1 to 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*>.05.

*\*\*Insert Figures 1 to 4 here\*\**

***Time 2- Time 3 Changes***

Multivariate statistics (Roy’s Largest Root) showed a significant effect of time; *F*(5,218)=4.66, *p*<.001, but not tuition fees; *F*(5,219)=1.48, *p*>.05 or time\*tuition fees interaction; *F*(5,219)=1.54, *p*>.05.

Univariate statistics showed a significant main effect of time on the GAD-7; *F*(1,222)=8.62, *p*<.01, CORE; *F*(1,222)=14.86, *p*<.001, CES-D; *F*(1,222)=8.25, *p*<.01 and PSS; *F*(1,222)=18.04, *p*<.001. For all measures there was an increase in scores from time two to time three. There was no main effect of time on AUDIT scores; *F*(1,357)=0.49, *p*>.05.

There was no main effect of tuition fees on scores on any variables: GAD-7 *F*(2,222)=1.11, *p*>.05; CORE *F*(2,222)=0.44, *p*>.05, CES-D *F*(2,222)=0.56, *p*>.05, PSS; *F*(2,222)=0.39, *p*>.05 or AUDIT; *F*(2,222)=1.83 *p*>.05.

There was a significant time\*tuition fees interaction for the GAD-7; *F*(2,222)=3.17, *p*<.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*>.05, CES-D *F*(2,222)=2.96, *p*>.05, PSS; *F*(2,222)=1.3, *p*>.05 and AUDIT *F*(2,222)=0.6, *p*>.05.

***Time 3- Time 4 Changes***

Multivariate statistics (Roy’s Largest Root) showed a significant effect of time; *F*(5,155)=2.98, *p*<.05, but not tuition fees; *F*(5,156)=.471 or time\*tuition fees interaction; *F*(5,156)=1.79, *p*>.05.

Univariate statistics showed a significant main effect of time on the GAD-7; *F*(1,159)4.97, *p*<.05, CORE; *F*(1,159)=12.23, *p*<.001 and CES-D; *F*(1,159)=5.71, *p*<.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*>.05 and AUDIT *F*(1,159)=2.61, *p*>.05.

There was no main effect of tuition fees on scores on any variables: GAD-7 *F*(2,159)=0.36, *p*>.05; CORE *F*(2,159)=0.48, *p*>.05, CES-D *F*(2,159)=0.77, *p*>.05, PSS; *F*(2,159)=0.25, *p*>.05 or AUDIT; *F*(2,159)=0.62 *p*>.05.

There was no significant time\*tuition fees interaction for score on any of the variables: GAD-7; *F*(2,159)=0.01, *p*>.05, CORE; *F*(2,159)=1.18, *p*>.05, CES-D *F*(2,159)=1.39, *p*>.05, PSS; *F*(2,159)=0.95, *p*>.05 and AUDIT *F*(2,159)=0.99, *p*>.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 significant gender\*time interaction for T1-T2 or T2-T3 (*details not given for sake of conciseness but are available on author contact*). There was no significant disability\*time interaction for T1-T2. There was however a significant disability\*time interaction for T2-T3 for the GAD-7 *F*(1,222)=5.37, *p*<.01andCES-D *F*(1,222)=6.68, *p*<.05. Running the Factorial MANOVA for T2-T3 with those with a disability excluded did not change the results however: there remained a significant interaction for the GAD, suggesting that 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 which part of the UK they came from (England, Wales, Scotland, Northern Ireland). There were 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 one, there were no significant differences in mental health between the different cohorts. However differences became apparent at time two: the significant interaction between fees and time demonstrated that whilst those who ere 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 ([22](#_ENREF_22)).

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 finding seems at odds with previous research with student populations, research with other populations has shown that factors such as worry about debt ([35](#_ENREF_35)) and financial strain ([36](#_ENREF_36)) are more important than amount of debt per se. It may be that those charged higher tuition fees may not be any more worried about this or perceive themselves to be more financially strained than those who are charged less. It is also possible that the disappearance of a difference between cohorts at time 3 may represent adjustment to the situation: becoming used to the size of their student loan. There was no such interaction for alcohol-related problems, and those charged less did in fact have higher scores for alcohol-related problems at times 1 and 2. This is at variance with previous research suggesting greater debt is related to greater alcohol problems ([24](#_ENREF_24), [25](#_ENREF_25)). This result may simply be that those charged lower fees have more disposable income to spend on alcohol.

***What is Already Known on this Subject?***

A number of previous epidemiological studies have shown a relationship between debt and mental health difficulties and drug and alcohol problems in the general UK population ([23-26](#_ENREF_23)). Previous research with British students has found that poor mental health is related to financial difficulties ([19](#_ENREF_19), [20](#_ENREF_20)), level of debt ([4](#_ENREF_4)), and concern about finances ([22](#_ENREF_22)). Research has also shown that students with greater financial concern have greater deterioration in mental health over time ([22](#_ENREF_22)). A previous cohort study compared English students to those from Finland where there are no tuition fees, finding poorer mental health in the English sample ([21](#_ENREF_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 so far.

***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 ([21](#_ENREF_21)). 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 and this may have had an impact on results. The sample used here may not be representative of the British undergraduate population as a whole. It was heavily female, and it is possible that those with mental health difficulties were more likely to take part. A previous study followed up students for three years ([22](#_ENREF_22)), and though it would be interesting to see whether differences between the cohort re-appear with time, this is not possible due to the current sample size and level of drop out at each time point.

**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.  However, given the time (during years one and two) when the study was conducted it is possible that concerns about debt which might surface nearer to or after graduation will not have been detected. It has recently 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 ([37](#_ENREF_37)). Therefore differences between those charged higher fees may not be become apparent for many years, and the situation needs further monitoring.

**Authors’ contribution**

The research design was developed by all authors. TR recruited participants and collected data. Data analysis was conducted by TR with input from PE and RR. TR drafted the article with input from RR and PE.

**Research Ethics**

Ethics approach was granted by the University of Southampton School Of Psychology Ethics Committee.

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*Figure 1:* Interaction between time and fees for GAD-7 (Anxiety)

*Figure 2:* Interaction between time and fees for CORE-GP (Global Mental Health)

*Figure 3:* Interaction between time and fees for CES-D (Depression)

*Figure 4:* Interaction between time and fees for PSS (Stress)