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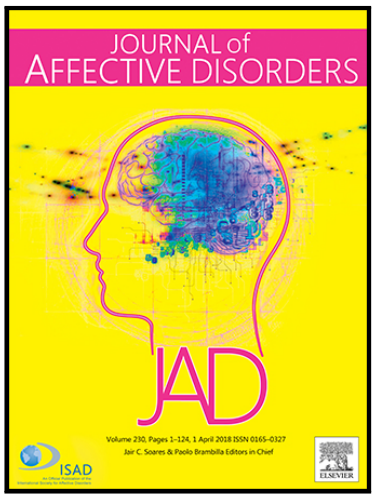

Financial threat, hardship and distress predict depression, anxiety and stress among the unemployed youths: A Bangladeshi multi-cities study

Mohammed A. Mamun , Shaila Akter , Imran Hossain , Mohammad Thanvir Hasan Faisal , Md. Atikur Rahman , Ahamedul Arefin , Imtiaz Khan , Lukman Hossain , Md. Ariful Haque , Sahadat Hossain , Moazzem Hossain , Tajuddin Sikder , Kagan Kircaburun , Mark D. Griffiths

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HIGHLIGHTS

- Unemployment has a contributory role in the development of mental health problems
- Bangladesh has increasing unemployment rates, especially among youth
- Among 988 unemployed graduates, there was a high rate of depression (81%)
- Prevalence rates of anxiety (61.5%) and stress (64.8%) were also high
- Financial wellbeing was weakly negatively associated with depression, anxiety, and stress.

Financial threat, hardship and distress predict depression, anxiety and stress among the unemployed youths: A Bangladeshi multi-cities study

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Abstract

Introduction: Unemployment has a contributory role in the development of mental health problems and in Bangladesh there is increasing unemployment, particularly among youth. Consequently, the present study investigated depression, anxiety, and stress among recent graduates in a multi-city study across the country.

Methods: A cross-sectional study was conducted among 988 Bangladeshi graduate jobseekers in six major cities of the country between August to November 2019. The measures included socio-demographics and life-style factors, study and job-related information, Economic Hardship Questionnaire, Financial Threat Scale, Financial Well-Being Scale, and Depression Anxiety Stress Scale-21.

Results: Depression, anxiety and stress rates among the present sample were 81.1% (n=801), 61.5% (n=608) and 64.8% (n=640) respectively. Factors related to gender, age, socio-economic conditions, educational background, lack of extra-curricular activities, and high screen activity were significant risk factors of depression, anxiety, and stress. Structural equation modeling indicated that (while controlling for age, daily time spent on sleep study, and social media use), financial threat was moderately positively related to depression, anxiety, and stress. Financial hardship was weakly positively associated with depression, anxiety, and stress, whereas financial wellbeing was weakly negatively associated with depression, anxiety, and stress.

Limitations: Due to the nature of the present study (i.e., cross-sectional study) and sampling method (i.e., convenience sampling), determining causality between the variables is not possible.

Conclusions: The present results emphasized the important detrimental role of financial troubles on young people's mental health by showing that financial problems among unemployed youth predict elevated psychiatric distress in both men and women.

Keywords: Depression; Anxiety; Stress; Financial factors; Unemployment youths; Bangladesh

Introduction

Underemployment is defined as a situation where an individual's employment is not adequate in terms of working hours, earnings, productivity, and use of skills, and the individual has to look for better and/or additional work to better utilize their education and skills, whereas unemployment is defined as not having any job (Daily Star, 2019; Rafi, Mamun, Hsan, Hossain, & Gozal, 2019). At present, both underemployment and unemployment are prominent problems among youth globally (including Bangladesh; where the present study was carried out) because the number of graduates has grown at a faster pace than the number of jobs available (Rafi et al., 2019).

According to the Bangladesh government, at present the country has 13.8 million underemployed people (i.e., 45.3% in service sector, 30.6% in agriculture sector and 24.1% in industry sector; Daily Star, 2019). Of these underemployed youth, 19.7% are looking for new or additional jobs because their present jobs are temporary, while 15.8% are looking for new jobs to get a higher salary, 9% want to work for more hours, 8.7% wish to have better jobs and activities, 8.6% want more prestigious and higher-ranking jobs, and 7.7% are in fear of losing their job (Daily Star, 2019). Additionally, the country has been ranked as having the second highest graduate unemployment rate (10.7%) among Asia-Pacific countries after Pakistan (International Labour Organization [ILO] cited in the Daily Jugantor, 2019). In 2000, Bangladesh had a 3.3% unemployment rate among general population, which increased to 3.4% in 2010 and 4.4% in 2017 (Daily Jugantor, 2019). It was claimed by the ILO, that the unemployment youth rate had doubled from 2010 to 2017, whereas 27.4% of youth were not engaged in any employment, education, or training (Daily Jugantor, 2019).

Underemployed or unemployed individuals often feel neglected and frustrated which may lead to psychiatric suffering and in extreme cases, can develop drug addictions to drugs and indulge in criminal activities (Lim, Lee, Jeon, Yoo, & Jung, 2018). Many previous studies have reported that mental suffering (i.e., depression, anxiety disorders, stress, hopelessness, panic attacks, etc.) are associated with underemployment and unemployment (due to factors such as increased competition, joblessness, job insecurity, low wages, lack of scopes in practicing acquired skills etc.) (Artazcoz et al., 2004; Cassidy & Wright, 2008; Lee et al., 2018; Lim et al., 2018; Mæhlisen et al., 2018; Meltzer et al., 2010; Ng et al., 2008; Rafi et al., 2019; Reneflot & Evensen, 2014; Tran et al, 2018). In global suicide cases, these mental disorders are appeared to be 90% of the suicide causality (Mamun & Griffiths, 2020a, b, c), whereas people with mental problem and unemployment status can be arguably considered at most suicide risky individuals (Bhuiyan et al., 2020; Dsouza et al., 2020; Griffiths & Mamun, 2020; Mamun & Ullah, 2020; Nordt et al. 2015).

In Bangladesh, the only previous study assessing mental health problems among unemployed university graduates (Rafi et al., 2019) only examined one particular type of jobseeker (those wanting to work for the Bangladesh Civil Service [BCS]), and comprised a small sample from

just one city. That study suggested further studies were needed with larger samples and from other major cities in the country, and exploring other specific situations such as economic hardship, distress, and threats that may directly affect the mental health of unemployed youth. Therefore, the present study (which had no specific hypotheses given its exploratory nature) examined the effect of socio-demographic variables, and job and economic condition-related factors (i.e., economic threat, financial hardship, and financial distress) on mental health issues (i.e., depression, anxiety, and stress), factors that have never been previously investigated in Bangladesh).

Methods

Participants and procedure

A cross-sectional study was conducted among Bangladesh graduate unemployed jobseekers from six major cities (i.e., Dhaka, Narayangonj, Sylhet, Chittagong, Mymensingh and Cox's Bazar) of the country between August and November 2019. The data were collected utilizing 'pen-and-paper' surveys from individuals at job preparation coaching centers utilizing a convenience sampling design. Data were collected from 1,063 participants from a total 1,162 eligible unemployed jobseekers (91.48% response rate). After removing incomplete surveys, 988 were kept for final analysis (47.5% females; age range 22 to 29 years).

Ethics

The survey was conducted according to the guidelines of the Helsinki Declaration 1975. Additional formal ethical issues as well as formal ethics permission were reviewed and approved by the respective coaching centers as well as the Institutional Review Board of the Institute of Allergy and Clinical Immunology of Bangladesh (IACIB), Dhaka, Bangladesh. All respondents were informed about the purpose of the study and their verbal and formal consent was obtained prior to participation. Participants were informed that all their information would be kept anonymous and confidential, and they were provided with information about the nature and purpose of the study, the procedure, and the right to withdraw their data.

Measures

Socio-demographics and Lifestyle Factors: Questions concerning socio-demographics and lifestyle factors included in the survey were age, gender, average hours of sleep per night, hours of daily social media use, cigarette smoking use (yes/no), illicit drug use (yes/no), socioeconomic status, and whether they engaged in at least 30 minutes daily physical activity (based on recommendations by Disu, Anne, Griffiths, & Mamun, 2019). Because Bangladesh has no specific national socioeconomic categories, socio-economic status was categorized into three categories based on monthly family income: upper class (more than 30,000 Bangladeshi Taka [BDT]), middle class, and lower class (less than 15,000 BDT) class (based on Rafi et al., 2019).

Study and Job-related Information: In relation to study-related variables, participants were asked which institutes they had graduated from (i.e., medical college, national, public, or private university), whether they thought the subject they studied was demanding, year of graduation, whether they were satisfied with their degree result, and whether they engaged in part-time jobs that were not associated with subject/skills they had attained in their degree (e.g., event management, blogging, YouTubing, etc.) and/or part-time jobs that had some association with their degree skills (e.g., tutoring low grade students). There were also questions relating to whether they had attended job examinations and what stage they reached (i.e., preliminary, written, and viva). As working for the Bangladeshi Civil Service is considered the most secure job in Bangladesh (Rafi et al., 2019), hence, if the participants' job focus was BCS or not was asked. Additionally, the factors that motived them to BCS were also asked in the present study.

Economic Hardship Scale: Economic hardship was assessed utilizing the Economic Hardship Questionnaire (EHQ; Lempers, Clark-Lempers, & Simons [1989]) comprising six items (e.g., "During the last few years, did your family cut back on social activities and entertainment expenses?") responded to on a four-point Likert scale from 1 (Never) to 4 (Very often). The EHQ assesses the financial hardships that individuals and families have in the context of economic adversity, where higher scores reflect higher financial hardship. High levels of internal consistency were obtained in previous research (Jesus et al., 2016; Marjanovic, Greenglass, Fiksenbaum, & Bell, 2013). In the present study the Cronbach's alpha was very good (0.86).

Financial Threat Scale: Financial threat was assessed utilizing the Financial Threat Scale (FTS; Marjanovic et al. [2013]) comprising five items (e.g., "What is the likelihood you will have to declare bankruptcy to manage your debt?") responded to on a five-point Likert scale from 1 (Not at all) to 5 (extremely uncertain) and assesses perceptions that individuals feel regarding their financial situation. High levels of internal consistency were obtained in previous research (Jesus et al., 2016; Marjanovic et al., 2013). In the present study, the Cronbach's alpha was very good (0.83).

Financial Wellbeing Scale: Financial wellbeing was assessed utilizing the Financial Well-Being Scale (FWBS; Norvilitis, Szablicki, & Wilson, [2003]) comprising four items (e.g., "I am uncomfortable with the amount of debt I am in") responded to on a five-point Likert scale from 1 (Strongly disagree) to 5 (Strongly agree). The FWBS assesses wellbeing concerning financial status, where higher scores reflect higher levels of perceived financial wellbeing. High levels of internal consistency were obtained in previous studies (Jesus et al., 2016; Marjanovic et al., 2013). In the present study, the Cronbach's alpha was good (0.79)

Depression Anxiety Stress Scale: Depression, anxiety, and stress were assessed utilizing the Depression Anxiety Stress Scale (DASS-21; Lovibond & Lovibond, 1995) comprising 21 items and three dimensions (seven items per dimension) (e.g., "I could not seem to experience any positive feeling at all" for depression; "I was worried about situations in which I might panic" for anxiety; and "I found it difficult to relax" for stress) responded to on a five-point Likert scale

from 0 (Did not apply to me at all) to 3 (Applied to me very much, or most of the time – Almost always). Higher scores on each dimension reflect higher depression, anxiety and stress respectively. Scoring of the sub-scales was as follows – depression: normal 0–9, mild 10–13, moderate 14–20, severe 21–27, and extremely severe +28; anxiety: normal 0–7, mild 8–9, moderate 10–14, severe 15–19, and extremely severe +20, and stress: normal 0–14, mild 15–18, moderate 19–25, severe 26–33, and extremely severe +34) (Lovibond & Lovibond, 1995). In the present study, the Cronbach's Alpha for depression, anxiety and stress were all very good (0.80, 0.82, and 0.81 respectively) as has been found in other previous Asian studies (e.g., Le et al., 2019; Quek et al., 2019; Wang et al., 2019).

Statistical analysis

Statistical Package for Social Science (SPSS) version 22.0 and AMOS version 23.0 were used for the present data analysis. In the present study, moderate, severe, and very severe were combined to calculate scores of depression, anxiety, and stress on the DASS (Rafi et al., 2019). For continuous variables, independent sample *t*-tests and SEM analysis were performed to examine the relationship between problematic and non-problematic scores of depression, anxiety, and stress, whereas descriptive statistics (e.g., frequencies, percentages, and chi-squares/Fisher's Exact tests) were used for all categorical data. All significant variables in the bivariate tests were entered into a binary logistic regression with 'depression', 'anxiety' and 'stress' as the dependent variables. The results of the binary logistic regression were interpreted with 95% confidence intervals and a *p*-value less than or equal 0.01 was deemed significant. Moreover, according to Hu and Bentler (1999), root-mean-square residuals (RMSEA) and standardized root-mean residuals (SRMR) lower than 0.08 and .05 indicate adequate and good fit respectively. The comparative fit index (CFI) and goodness of fit index (GFI) higher than 0.90 and 0.95 indicate adequate and good fit respectively. Bootstrapping method with 95% bias-corrected confidence intervals and 5000 bootstrap samples were used to calculate the standardized beta coefficients between independent and outcome variables.

Results

Prevalence of depression, anxiety and stress: Depression, anxiety and stress prevalence rates in the present sample were 81.1% (n=801), 61.5% (n=608) and 64.8% (n=640) respectively (see Table 1).

Distribution of socio-demographic variables with depression, anxiety, and stress: Females were more prone to depression [i.e., (83.8% vs. 78.5%; χ^2=4.499, p=0.035), anxiety (64.8% vs. 58.5%; χ^2=4.108, p=0.043), and stress (70.1% vs. 60.1%; χ^2=10.937, p<0.001). Most of the participants were from upper class socioeconomic status (56.0%), but there was no significant association between depression and socioeconomic status (χ^2=0.407, p=0.816), although lower class family participants reported significantly more anxiety (χ^2=9.522, p=0.009) and stress (χ^2=6.211, p=0.045) compared to the upper-class participants (see Table 1).

Distribution of study-related variables with depression, anxiety, and stress: Over one-third of the participants (38.5%) graduated from public university, and compared to other institutes, a higher proportion of national university students reported depression (χ^2=11.274, p=0.010), and a higher proportion of medical college students reported stress (χ^2=17.316, p<0.001). Additionally, 54.3% of the participants had no extra-curriculum activities and this group reported significantly higher degrees of anxiety (65.3% vs. 57.1%; χ^2=6.998, p=0.006) and stress (68.5% vs. 60.4%; χ^2=7.003, p=0.006) (see Table 1).

Distribution of job-related variables with depression, anxiety, and stress: Over one-third of the total participants (38.7%) had no part-time job, and these graduates reported significantly more stress than those with part-time jobs (70.2% vs. 61.4%; χ^2=7.900, p=0.005), whereas most participants who had sat any previous job examinations reported more depression than those who had not (83.5% vs. 75.9%; χ^2=7.963, p=0.005). Half of the participants aimed for a career with the BCS (50%), and BCS jobseekers reported significantly more depression (84.2% vs. 77.9%; χ^2=6.339, p=0.012) whereas non-BCS jobseekers reported more stress (68.8% vs. 60.7%; χ^2=7.098, p=0.005). The main reasons given for wanting to work for the BCS were because it was a secure job (32.7%), for high wages (19.7%), to serve the nation (18.1%), to have some administrative power (13.4%), for an easier working environment (12.8%), and for family and/or partner expectation (11.4%) (participants could provide more than one response which is why this adds up to over 100%).

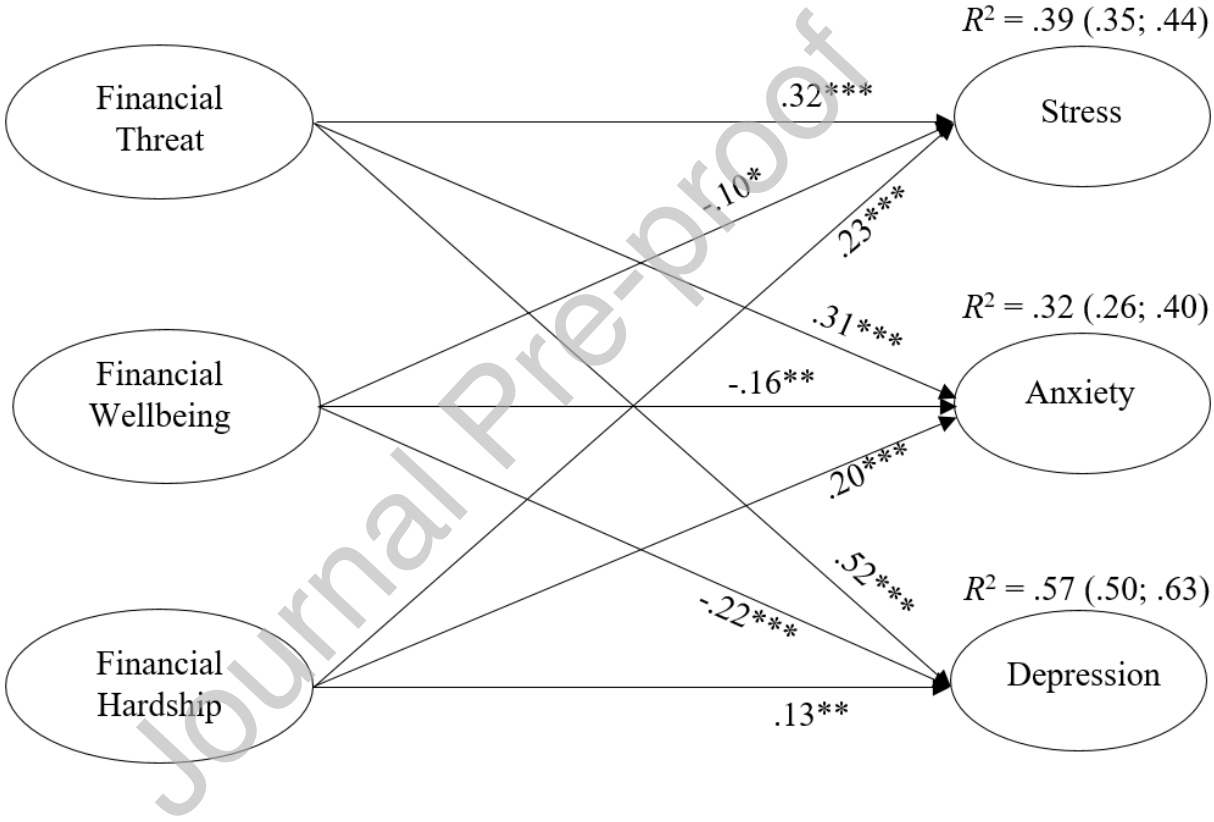
These who perceived working for the BCS as secure job reported more depression (86.7% vs. 79.7%; χ^2=4.186, p=0.041), whereas participants who did not perceive working for the BCS as secure job had greater anxiety (68.0% vs. 58.2%; χ^2=4.575, p=0.032). Moreover, those who did not want to work at the BCS for more administrative power or did not want to work at the BCS because they did not think it was an easier working environment were significantly more likely to report stress (65.8% vs. 47.0%; χ^2=14.464, p<0.001) and anxiety (65.6% vs. 50.0%; χ^2=9.643, p<0.001) respectively. Finally, those wanting a career in the BCS for high wages reported more depression (90.8% vs. 80.0%; χ^2=10.325, p<0.001), but less stress (52.8% vs. 66.0%; χ^2=8.614, p<0.001), and these who did not want a career with the BCS to serve the nation were more depressed than those who did (88.3% vs. 77.1%; χ^2=10.791, p<0.001) (see Table 1).

Distribution of continuous variables with depression, anxiety and stress: Depressed participants were significantly older in age (25.81 years ± 5.26 vs. 25.73 years ± 2.44, p=0.017) and had higher scores of economic hardship (16.58 ± 4.11 vs. 13.83 ± 4.46, p=0.045). Anxious participants were significantly older in age (25.84 years ± 2.39 vs. 25.74 years ± 4.11, p=0.021), engaged in more daily social media use (3.19 hours ± 2.93 vs. 2.52 hours ± 2.44, p<0.001), and had lower scores of economic wellbeing (9.97 ± 3.52 vs. 11.99 ± 3.91, p=0.003) were reported. Stressed participants had significantly higher daily social media use (3.33 hours ± 3.01 vs. 2.19 hours ± 2.05, p<0.001) and scores of economic hardship (16.78 ± 4.38 vs. 14.71 ± 3.84, p=0.009), and a significantly lower mean score of economic wellbeing (10.08 ± 3.60 vs. 11.94 ± 3.90, p=0.040) (see Table 2).

Relationships using SEM

Structural equation modelling was performed to examine the relationships of financial threat, wellbeing, and hardship with depression, anxiety, and stress while adjusting for age and daily sleep, study, and social media use durations. Goodness of fit values indicated mostly good fit to the data in total sample (χ^2=1976.82, df=691, p<0.001, χ^2/df=2.86, RMSEA=0.04 [CI 90% (0.04, 0.05)], SRMR=0.04, CFI=0.91, GFI=0.90), females (χ^2=1517.94, df=691, p<0.001, χ^2/df=2.20, RMSEA=0.05 [CI 90% (0.05, 0.05)], SRMR=0.04, CFI=0.87, GFI=0.86), and males (χ^2 = 1308.52, df= 691, p<0.001, χ^2/df=1.89, RMSEA=0.04 [CI 90% (0.04, 0.05)], SRMR=0.04, CFI=0.93, GFI=0.89).

Figure 1. Final model of the relationships among variables



Financial threat was positively associated with depression in the total sample (β=0.52, p<0.001; 95% CI [0.43, 0.60]), females (β=0.46, p<0.001; 95% CI [0.32, 0.60]), and males (β=0.54, p<0.001; 95% CI [0.42, 0.60]); with anxiety in the total sample (β=0.31, p<0.001; 95% CI [0.22, 0.41]), females (β=0.30, p<0.001; 95% CI [0.16, 0.41]), and males (β=0.28, p<0.001; 95% CI [0.15, 0.41]); with stress in the total sample (β=0.37, p<0.001; 95% CI [0.28, 0.46]), females (β=0.33, p<0.001; 95% CI [0.19, 0.46]), and males (β=0.36, p<0.001; 95% CI [0.23, 0.46]). Financial wellbeing was negatively related to depression in the total sample (β=-0.22, p<0.001; 95% CI [-0.32, -0.14]), females (β=-0.23, p<0.01; 95% CI [-0.37, -0.14]), and males (β=-0.23,

p<0.001; 95% CI [-0.35, -0.14]); to anxiety in the total sample (β=-0.16, p<0.01; 95% CI [-0.25, -0.06]) and males (β=-0.24, p<0.01; 95% CI [-0.36, -0.06]); and to stress in the total sample (β=-0.10, p<0.05; 95% CI [-0.19, -0.01]) and males (β=-0.16, p<0.05; 95% CI [-0.28, -0.01]). Financial wellbeing was not associated with anxiety and stress among females.

Financial hardship was positively related to depression in the total sample (β=0.13, p<0.01; 95% CI [0.05, 0.20]), females (β=0.14, p<0.05; 95% CI [0.03, 0.20]), and males (β=0.12, p<0.05; 95% CI [0.02, 0.20]); to anxiety in the total sample (β=0.20, p<0.001; 95% CI [0.12, 0.29]), females (β=0.21, p<0.01; 95% CI [0.09, 0.29]), and males (β=0.19, p<0.01; 95% CI [0.08, 0.29]); to stress in the total sample (β=0.23, p<0.001; 95% CI [0.14, 0.31]), females (β=0.23, p<0.001; 95% CI [0.12, 0.31]), and males (β=0.25, p<0.001; 95% CI [0.13, 0.31]). The tested model explained 57%, 50%, and 63% of the variance of depression in total sample, females, and males respectively; 32%, 26%, and 40% of the variance of anxiety in total sample, females, and males respectively; and 39%, 35%, and 44% of the variance of stress in total sample, females, and males respectively (Figure 1). Negative financial situations more robustly predicted mental health problems in males than females.

In Figure 1, latent variables are represented by circles. R^2 values on the left side inside the brackets belong to females whereas the ones on the right belong to males. For clarity, scale items, control variables (sleep, study, social media use, and age), and standardized coefficients obtained in the female and male samples have not been depicted in the figure. Daily sleep duration was negatively related to depression in total sample (β=-0.08, p<0.01; 95% CI [-0.13, -0.03]), and males (β= -0.08, p<0.05; 95% CI [-0.15, -0.01]). Daily social media use duration was positively associated with depression in the total sample (β=0.10, p<0.01; 95% CI [0.04, 0.15]), and males (β=0.09, p<0.05; 95% CI [0.02, 0.15]); with anxiety in the total sample (β=0.14, p<0.01; 95% CI [0.07, 0.21]), females (β=0.19, p<0.01; 95% CI [0.06, 0.30]), and males (β=0.08, p<0.05; 95% CI [0.01, 0.16]); and with stress in the total sample (β=0.24, p<0.01; 95% CI [0.17, 0.30]), females (β=0.28, p<0.001; 95% CI [0.17, 0.38]), and males (β=0.18, p<0.001; 95% CI [0.10, 0.26]). Age was positively related to depression (β=0.08, p<0.05; 95% CI [0.01, 0.15]) and anxiety in males (β=0.15, p<0.001; 95% CI [0.07, 0.23]); and negatively to stress in the total sample (β=-0.07, p<0.05; 95% CI [-0.12, -0.00]) and females (β=-0.15, p<0.01; 95% CI [-0.22, -0.06]).

Risk factors for depression, anxiety and stress

Tables 3, 4, 5 and 6 show the risk factors of depression, anxiety, and stress respectively. Factors related to gender, age, socio-economic condition, educational background, lack of extra-curricular activities, and social media use, were significant risk factors for depression, anxiety, and stress of the present study's participants. Moreover, structural equation modeling indicated that (while controlling for age, daily time spent on sleep, study, and social media use), financial threat was moderately positively related to depression, anxiety, and stress; financial hardship was weakly positively associated with depression, anxiety, and stress, whereas financial wellbeing

was weakly negatively associated with depression, anxiety, and stress. The aforementioned associations among the total sample were mostly consistent between males and females except financial wellbeing which was not associated with anxiety and stress among females. Furthermore, lower daily sleep time was related to elevated depression. Higher daily social media use was associated with higher depression, anxiety, and stress.

Discussion

Only one previous Bangladeshi study by Rafi et al. (2019) has investigated similar variables to the present study and it found that compared to other Bangladeshi cohorts, job-seeking graduates suffered had higher prevalence rates of mental health disorders (i.e., depression [49.3%], anxiety [53.6%], and stress [28.3%]), but which were much lower than the prevalence rates in the present study (i.e., depression [81.1%], anxiety [61.5%], and stress [64.5%]). Compared to other Bangladeshi cohorts (e.g., general population, students, post-stoke patients, post-disaster survivors, etc.), the rates of mental health disorders in the present study were much higher than previous studies (Asghar et al., 2007; Fitch et al., 2017; Hossain et al., 2019; Islam et al., 2016; Mamun & Griffiths, 2019a; Mamun et al., 2019a, b, c; Roy et al., 2012). Additionally, these prevalence rates among unemployed/underemployed individuals are higher than among any other Bangladeshi cohort investigated previously and therefore are arguably among the most vulnerable groups to acquiring mental health conditions. The prevalence rates among Bangladeshi cohorts are also higher than for similar cohorts in other countries. For example, 29% depression, 31% anxiety, and 22% stress were reported among unemployed US youths following sudden involuntary unemployment (Howe, Hornberger, Weihs, Moreno, & Neiderhiser, 2012); 39.5% depression among unemployed university graduates in Korea (Lim et al., 2018); 69.4% stress among unemployed graduates in UK (Cassidy & Wright, 2008); 32.2% depression, 39.7% anxiety, and 33% stress among unemployed adults after the economic crisis in Greece (Kokaliari, 2018); 51.5% depression and 35.5% anxiety among unemployed individuals in Spain (Navarro-Abal, Climent-Rodríguez, López-López, & Gómez-Salgado, 2018); and 10.4% stress among unemployed individuals in Denmark (Mæhlisen et al., 2018).

Prevalence rates of mental health suffering among unemployed youth are commonly higher than general cohorts due to the stress of being jobless. Additionally, the lengthy process of BCS job selection (i.e., typically more than one and half years from application to appointment) may have had an influence on the high prevalence rates of mental illness (Rafi et al., 2019). However, these speculations need investigating empirically in future studies.

In general, women are likely to suffer from mental health issues than men (Rosenfield & Mouzon, 2013; Van de Velde, Bracke, & Levecque, 2010), and a similar figure was also reported among unemployed females in a previous study (Artazcoz et al., 2004). However, the gender differences in mental health among unemployed youth can be influenced by many factors such as prejudice and sexism (i.e., employers not wanting to give particular jobs to women) and cultural beliefs (e.g., society believing that women should be at home rather than being at work)

(Strandh, Hammarström, Nilsson, Nordenmark, & Russel, 2013). For instance, in a typical male-dominated society like Bangladesh, job providers prefer men for their jobs, and getting a job can be harder for the females. As reported by the ILO (2019), globally, 75% of the men are engaged in labor force, whereas it is 49% for the females. In Bangladesh, the disparity is even greater (i.e., 33% women and 79.8% men engaged in any work). Therefore, it is evident that Bangladeshi job employers are not as willing to provide job to females compared to males. This may be because unemployed females have higher rates of mental disorders compared to males, which ironically may be because unemployment contributes to the high rates of mental illness.

In Bangladesh, graduates from national universities (compared to other student cohorts such as graduates from medical colleges and public universities) have less opportunities in getting jobs because they are considered to have fewer professional skills because of outdated curricula that do not fulfill job requirements needed by employers (Alam, 2008; Haque, 2019). Like national university graduates, private university students are less fortunate in getting jobs (Billah, 2019). Furthermore, the number of medical graduates has greatly increased over the past decade, but there are not enough proper jobs in Bangladesh for newly qualified physicians (Zahid, 2018). The lack of jobs for the new physicians occurs because in Bangladesh there is no referral system from family physicians to specialist doctors and consultants operating in private practice (Zahid, 2018). Graduates from public university are more likely to have secure jobs because they typically have more dynamic skills and have good curricula as well as being allowed proper time during the academic year to compete for jobs and attend job interviews. Based on the aforementioned reasons, this study findings (i.e., public university graduates are more mentally stable than the other institutes) can be explained. Additionally, the present study also reported that not having part-time jobs was a risk factor for anxiety and stress.

As noted earlier, working for the BCS is considered a highly demanding and secure job in Bangladesh. Graduates face fierce competition because, on average, 171 candidates compete for each vacant position (Daily Star, 2018). Getting such a job is also a lengthy process, therefore, greater mental health issues are not unusual among those wanting a BCS job (Rafi et al., 2019). However, unexpectedly, the present study found that graduates wanting a BCS job were more depressed but less stressed. There is no clear reason why this sub-group were less stressed therefore further research is needed to address this. Additionally, among the reasons for wanting a job with the BCS, participants who perceived working for the BCS was a secure job were more depressed, findings that are opposite to that in the one previous study in Bangladesh (i.e., those who perceived the BCS as insecure job were more depressed (Rafi et al., 2019). There are no clear reasons for the contradictory results between these two studies and may simply be the result of using different samples.

In the present study, greater daily social media use was associated with depression, anxiety, and stress as noted in other Bangladeshi studies (Anjum et al., 2019; Hossain et al., 2019). The associative nature may be because using the internet for more than 35 hours weekly is associated with online addiction which have also been shown to be associated with depression, anxiety,

alcoholism, attention deficit, hyperactivity, sleep disturbance, and self-harm (Alimoradi, et al., 2019; Ho et al., 2014; Kuss, Griffiths, & Binder, 2013; Lin et al., 2014; Mamun & Griffiths, 2019a,b; Mamun et al., 2019b, d; 2020a; Van der Aa et al., 2009). In the present study, other potentially addictive behaviors such as cigarette smoking and using illicit drug use were not associated with risk for mental health disorders, even though these behaviors are well-established as a contributing factor of mental disturbances (Degenhardt & Hall, 2001). This may have been because the question relating to these behaviors did not ask about frequency or severity and only needed a simple 'yes/no' response.

Economic factors (i.e., hardship, threats, and distress) often generate uncertainty and threat perceptions among the populations, so it is not surprising that mental health may be affected (Jesus et al., 2016; Lempers et al., 1989; Marjanovic et al., 2013, 2015). Like previous studies (e.g., Jesus et al., 2016; Lempers et al., 1989; Marjanovic et al., 2013, 2015), financial hardship, economic threat, and financial hardship positively predicted depression, anxiety and stress in the present SEM analysis. These economic factors help explain the high prevalence rates of depression, anxiety and stress found in the present study. Therefore, the emission of the unemployment situation among the youths is highly needed for their well-being.

Due to the nature of the present study (i.e., cross-sectional study) and sampling method (i.e., convenience sampling), causal mechanisms between the variables cannot be determined. The study also relied on self-report which is subject to well-known methods biases. Moreover, this study did not recruit from all the major cities of the country which is also a limitation in relation to representativeness. Additionally, the study did not explore confounding factors associated with mental disorders and unemployment including impaired work performance, health problems, and substance abuse (Lee et al., 2018; Hossain et al., 2020; Tran et al., 2019; Zhang et al., 2018). Finally, the study excluded the non-graduate unemployed individuals, therefore the generalizability of present findings among Bangladeshi unemployed youths is somewhat limited. Despite these limitations, the study provided baseline information regarding mental health suffering among unemployed graduates from multiple major cities in Bangladesh.

Conclusions

The present study reported that a high proportion of unemployed graduates in Bangladesh suffer from mental health issues (i.e., depression, anxiety and stress). And these high rates of mental sufferings are associated with about 90% of the suicidality (Jahan et al., 2020; Mamun et al., 2020b, c). which warrant to suggest for further studies concerning the suicidal behaviors among the unemployed youths. Besides, mental health literacy increasement can be helpful for early diagnosis, treatment and prevention from the illness (Arafat & Mamun, 2019; Arafat, Mamun & Uddin, 2019; Bhuiyan et al., 2020b; Mamun & Griffiths, 2020a; Masud et al., 2020). The findings of this study also demonstrated that (along with socio-demographics, study-related variables, and job-related variables) financial factors such as financial threat, economic hardship, and economic distress were strong predictors of these mental health conditions among

unemployed Bangladeshi graduates. Therefore, a holistic approach is needed for the unemployed graduates to address their mental health. Some initiatives need to be taken during the university education, and some are needed between the period of university education completion and gaining employment. During university, higher education authorities should provide more job skilled-based activities and vocational training in different subject areas so that graduates can create their own businesses (i.e., become self-employed) and employ other individuals and become financially solvent (Rafi et al., 2019). Students have to be made aware about common psychological disorders in their early life, which can be helpful for early diagnosis and intervention (Mamun & Griffiths, 2020d). During the interim period between the end of university education and getting gaining employment, adequate mental health support and resilience training programs are needed to mitigate the risk of mental health disorders among unemployed graduates.

Authors' contribution:
Study planning: MAM; ***Study plan validation:*** Al authors; ***Data collection and data entry:*** SA, IH, MTHF, MAR, AA, IK, LH & MAH; ***Data analysis:*** MAM & KG; ***Data interpretation:*** SH, MH, JS, MDG; ***First draft writing:*** MAM; ***Partial help in first drafting:*** SA, IH, MTHF, MAR, AA, IK, LH & MAH; ***Re-writing first draft:*** SH & MGD; ***Frist draft validation:*** MAM, SA, IH, MTHF, MAR, AA, IK, LH, MAH, SH, MH, TS, KK & MDG; ***Critical review:*** MAM, SH, MH, TJ, KK & MGD; ***Final approval:*** All authors.
Financial Disclosure: The authors involved in this study did not have any with other people or organizations that could inappropriately influence (bias) the work.

Ethics: The survey was conducted according to the guidelines of the Helsinki Declaration 1975. Additional formal ethical issues as well as formal ethics permission were reviewed and approved by the respective coaching centers as well as the Institutional Review Board of the Institute of Allergy and Clinical Immunology of Bangladesh (IACIB), Dhaka, Bangladesh. All respondents were informed about the purpose of the study and their verbal and formal consent was obtained prior to participation. Participants were informed that all their information would be kept anonymous and confidential, and they were provided with information about the nature and purpose of the study, the procedure, and the right to withdraw their data.

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Table 1. Distribution of the variables according to depression, anxiety, and stress levels

Variables	Total (988); *n* (%)	Depression (801; 81.1%)			Anxiety (608; 61.5%)			Stress (640; 64.8%)		
		Yes; *n* (%)	X^2 test value	*p*-value	Yes; *n* (%)	X^2 test value	*p*-value	Yes; *n* (%)	X^2 test value	*p*-value
Socio-demographics										
Gender										
Female	469 (47.5)	393 (83.8)	4.499	0.035	304 (64.8)	4.108	0.043	329 (70.1)	10.937	<0.001
Male	516 (52.2)	405 (78.5)			302 (58.5)			310 (60.1)		
Socio-economic status										
Lower class	116 (11.7)	93 (80.2)	0.407	0.816	84 (72.4)	9.522	0.009	85 (73.3)	6.211	0.045
Middle class	245 (24.8)	202 (82.4)			159 (64.9)			166 (67.8)		
Upper class	553 (56.0)	457 (82.6)			322 (58.2)			344 (62.2)		
Exercise										
Yes	541 (54.8)	439 (81.1)	0.012	0.911	325 (60.1)	1.083	0.298	323 (59.7)	13.164	<0.001
No	439 (44.4)	355 (80.9)			278 (63.3)			311 (70.8)		
Cigarette smoker										
Yes	214 (21.7)	183 (85.5)	3.477	0.062	137 (64.0)	0.681	0.409	138 (64.5)	0.004	0.953
No	765 (77.4)	611 (79.9)			466 (60.9)			495 (64.7)		
Psychoactive substance user										
Yes	21 (2.1)	16 (76.2)	0.300	0.584	13 (61.9)	0.002	0.967	15 (71.4)	0.419	0.517
No	955 (96.7)	773 (80.9)			587 (61.5)			617 (64.6)		
Study-related variables										
Graduated institute										
Private university	171 (17.3)	141 (82.5)	11.274	0.010	108 (63.2)	4.650	0.199	117 (68.4)	17.316	<0.001
National university	237 (24.0)	207 (87.3)			149 (62.9)			141 (59.5)		
Medical college	190 (19.2)	153 (80.5)			126 (66.3)			145 (76.3)		
Public university	380 (38.5)	291 (76.6)			219 (57.6)			232 (61.1)		
Subjective view of degree subject										
Low demanding	309 (31.3)	254 (82.2)	4.455	0.216	186 (60.2)	5.894	0.117	199 (64.4)	1.393	0.707
Moderately demanding	154 (15.6)	134 (87.0)			105 (68.2)			97 (63.0)		
High demanding	456 (46.2)	366 (80.3)			275 (60.3)			305 (66.9)		
Graduation year										
2016 to 2012	269 (27.2)	229 (85.1)	12.31	0.006	167 (62.1)	4.344	0.337	178 (66.2)	5.520	0.137
2017	191 (19.3)	164 (85.9)			122 (63.9)			127 (66.5)		
2018	205 (20.7)	162 (79.0)			112 (54.6)			120 (58.5)		
2019-2020	203 (20.5)	151 (74.4)			126 (62.1)			140 (69.0)		
Satisfaction with academic result										
Yes	596 (60.3)	475 (79.7)	1.838	0.175	355 (90.6)	2.400	0.121	376 (63.1)	1.704	0.192
No	375 (38.0)	312 (83.2)			242 (64.5)			252 (67.2)		
Extra-curriculum skills										
Yes	452 (45.7)	369 (81.6)	0.173	0.678	258 (57.1)	6.998	0.008	273 (60.4)	7.003	0.008
No	536 (54.3)	432 (80.6)			350 (65.3)			367 (68.5)		
Job-related variables										
Part-time job										
Yes	606 (61.3)	500 (82.5)	2.104	0.147	361 (59.6)	2.563	0.109	372 (61.4)	7.900	0.005
No	382 (38.7)	301 (78.8)			247 (64.7)			268 (70.2)		
Sat exams for job examination										
Yes	677 (68.5)	565 (83.5)	7.963	0.005	425 (62.8)	1.394	0.238	441 (65.1)	0.124	0.725
No	311 (31.5)	236 (75.9)			183 (58.8)			199 (64.0)		

Progress in the previous job exams										
Preliminary	234 (23.7)	190 (81.2)	5.142	0.076	144 (61.5)	1.224	0.542	150 (64.1)	0.969	0.616
Written	195 (19.7)	173 (88.7)			130 (66.7)			128 (65.6)		
Viva	182 (18.4)	149 (81.9)			117 (64.3)			125 (68.7)		
Wanting job in the BCS as main job goal										
Yes	494 (50.0)	416 (84.2)	6.339	0.012	304 (61.5)	<0.001	1.000	300 (60.7)	7.098	<0.001
No	494 (50.0)	385 (77.9)			304 (61.5)			340 (68.8)		
Reasons for wanting to work in the Bangladesh Civil Service *										
Job security										
Yes	323 (32.7)	280 (86.7)	4.186	0.041	188 (58.2)	4.575	0.032	197 (61.0)	0.013	0.909
No	172 (17.4)	137 (79.7)			117 (68.0)			104 (60.5)		
Family and/or partner expectation										
Yes	113 (11.4)	97 (85.8)	0.282	0.596	71 (62.8)	0.092	0.762	69 (61.1)	0.004	0.950
No	382 (38.7)	320 (83.8)			234 (61.3)			232 (60.7)		
More administrative power										
Yes	132 (13.4)	105 (79.5)	2.991	0.094	71 (53.8)	4.664	0.031	62 (47.0)	14.464	<0.001
No	363 (36.7)	312 (86.0)			234 (64.4)			239 (65.8)		
Easier working environment										
Yes	126 (12.8)	104 (82.5)	0.369	0.543	63 (50.0)	9.643	<0.001	68 (54.0)	3.318	0.069
No	369 (37.3)	313 (84.8)			242 (65.6)			233 (63.1)		
High wages										
Yes	195 (19.7)	177 (90.8)	10.325	<0.001	119 (61.0)	0.047	0.828	103 (52.8)	8.614	<0.001
No	300 (30.4)	240 (80.0)			186 (62.0)			198 (66.0)		
To serve nation										
Yes	179 (18.1)	138 (77.1)	10.791	<0.001	107 (59.8)	0.401	0.526	112 (62.6)	0.365	0.546
No	316 (32.0)	279 (88.3)			198 (62.7)			189 (59.8)		

*multiple response allowed

Table 2. Mean differences of the continuous variables with total sample according to depression, anxiety and stress levels

Variables	**Total (*mean* ± *SD*)**	**Depression (*mean* ± *SD*)**			**Anxiety (*mean* ± *SD*)**			**Stress (*mean* ± *SD*)**		
		Yes	**No**	***p*-value**	**Yes**	**No**	***p*-value**	**Yes**	**No**	***p*-value**
Age (year)	25.80 ± 3.169	25.81± 5.26	25.73 ± 2.44	0.017	25.84 ± 2.39	25.74 ± 4.11	0.021	25.70 ± 2.40	25.97 ± 4.22	0.060
Sleep time nightly (h)	7.22 ± 1.42	7.24 ± 1.38	7.12 ± 1.56	0.231	7.27 ± 1.43	7.14 ± 1.40	0.740	7.23 ± 1.43	7.20 ± 1.39	0.487
Social media use daily (h)	2.93 ± 2.77	2.96 ± 2.78	2.82 ± 2.74	0.119	3.19 ± 2.93	2.52 ± 2.44	<0.001	3.33 ± 3.01	2.19 ± 2.05	<0.001
Study time daily (h)	3.24 ± 2.58	3.11 ± 2.60	3.84 ± 2.45	0.077	3.17 ± 2.62	3.37 ± 2.52	0.630	3.26 ± 2.61	3.21 ± 2.54	0.869
Economic threat	15.90 ± 4.97	16.87 ± 4.52	11.76 ± 4.71	0.268	16.91 ± 4.71	14.30 ± 4.97	0.060	17.00 ± 4.67	13.89 ± 4.88	0.135
Economic wellbeing	10.74 ± 3.80	10.02 ± 3.50	13.96 ± 3.44	0.354	9.97 ± 3.52	11.99 ± 3.91	0.003	10.08 ± 3.60	11.94 ± 3.90	0.040
Economic hardship	16.06 ± 4.31	16.58 ± 4.11	13.83 ± 4.46	0.045	16.79 ± 4.26	14.91 ± 4.14	0.780	16.78 ± 4.38	14.71 ± 3.84	0.009

Table 3. Logistic regression analysis of the variables with depression

Variables	Unadjusted model			Adjusted model		
	Odds ratio (OR)	**95% Confidence Interval (CI)**	***p*-value**	**Adjusted odds ratio (AOR)**	**95% Confidence Interval (CI)**	***p*-value**
Gender						
Female	1.417	1.062-1.958	0.034	1.874	1.016-3.457	0.044
Male	Reference			Reference		
Graduated institute						
Private university	1.437	0.907-2.277	0.012	0.920	0.384-2.205	0.072
National university	2.110	1.345-3.311		2.679	1.197-5.993	
Medical college	1.265	0.822-1.945		0.857	0.374-1.963	
Public university	Reference			Reference		
Graduation year						
2016 to 2012	1.972	1.244-3.125	0.007	2.342	0.949-5.779	0.217
2017	2.092	1.250-3.500		1.736	0.695-4.340	
2018	1.297	0.818-2.057		1.148	0.507-2.601	
2019-2020	Reference			Reference		
Sat for job examination						
Yes	1.603	1.153-2.29	0.005	0.920	0.431-1.964	0.829
No	Reference			Reference		
Wanting job with the BCS as main job goal						
Yes	1.510	1.094-2.084	0.012	0.000	-	1.000
No	Reference			Reference		
Job security						
Yes	1.664	1.018-2.718	0.042	1.567	0.857-2.867	0.145
No	Reference			Reference		
High wages						
Yes	2.458	1.402-4.310	0.002	1.496	0.792-2.826	0.215
No	Reference			Reference		
To serve nation						
Yes	0.446	0.274-0.728	0.001	0.506	0.282-0.907	0.022
No	Reference			Reference		

Table 4. Logistic regression analysis of the variables with anxiety

Variables	Unadjusted model			Adjusted model		
	Odds ratio (OR)	**95% Confidence Interval (CI)**	***p*-value**	**Adjusted odds ratio (AOR)**	**95% Confidence Interval (CI)**	***p*-value**
Gender						
Female	1.306	1.009-1.690	0.043	1.062	0.715-1.577	0.766
Male	Reference			Reference		
Socio-economic status						
Lower class	1.883	1.212-2.926	0.009	2.065	1.067-3.997	0.017
Middle class	1.326	0.971-1.812		1.737	1.092-2.763	
Upper class	Reference			Reference		
Extra-curriculum skills						
Yes	0.707	0.546-0.914	0.008	0.738	0.493-1.105	0.140
No	Reference			Reference		
Job security						
Yes	0.655	0.444-0.966	0.033	0.669	0.435-1.029	0.067
No	Reference			Reference		

Easier working environment						
Yes	0.525	0.348-0.791	0.002	0.614	0.394-0.958	0.031
No	Reference			Reference		

Table 5. Logistic regression analysis of the variables with stress

Variables	**Unadjusted model**			**Adjusted model**		
	Odds ratio (OR)	**95% Confidence Interval (CI)**	***p*-value**	**Adjusted odds ratio (AOR)**	**95% Confidence Interval (CI)**	***p*-value**
Gender						
Female	1.562	1.198-2.035	0.001	1.608	1.064-2.429	0.024
Male	Reference			Reference		
Socio-economic status						
Lower class	1.666	1.067-2.601	0.046	1.851	0.928-3.690	0.056
Middle class	1.277	0.929-1.755		1.694	1.038-2.766	
Upper class	Reference			Reference		
Exercise						
Yes	0.610	0.466-0.797	<0.001	0.643	0.411-1.007	0.054
No	Reference			Reference		
Graduated institute						
Private university	1.382	0.943-2.027	0.001	1.139	0.573-2.265	0.260
National university	0.937	0.673-1.305		0.751	0.466-1.211	
Medical college	2.056	1.388-3.045		1.450	0.759-2.772	
Public university	Reference			Reference		
Extra-curriculum skills						
Yes	0.702	0.540-0.913	0.008	0.763	0.480-1.212	0.252
No	Reference			Reference		
Part-time job						
Yes	0.676	0.514-0.889	0.005	0.989	0.607-1.610	0.963
No	Reference			Reference		
Wanting job with the BCS as main job goal						
Yes	0.700	0.539-0.911	0.008	<0.001	<0.001	1.00
No	Reference			Reference		
More administrative power						
Yes	0.460	0.307-0.689	<0.001	0.584	0.371-0.917	0.020
No	Reference			Reference		
High wages						
Yes	0.577	0.399-0.834	0.003	0.778	0.501-1.210	0.266
No	Reference			Reference		

Table 6. Standardized estimates of effects on depression, anxiety, and stress

	Effect (S.E.)		
	Females	Males	Total sample
Financial threat → Depression	.46***(.05)	.54***(.07)	.52***(.06)
Financial threat → Anxiety	.30***(.06)	.28***(.04)	.31***(.04)
Financial threat → Stress	.33***(.03)	.36***(.05)	.37***(.03)
Financial wellbeing → Depression	-.23**(.05)	-.23***(.07)	-.22***(.06)
Financial wellbeing → Anxiety	-.08(.04)	-.24**(.08)	-.16**(.05)

Financial wellbeing → Stress	-.05(.03)	-.16*(.04)	-.10*(.03)
Financial hardship → Depression	.14*(.05)	.12*(.05)	.13**(.04)
Financial hardship → Anxiety	.21**(.06)	.19**(.05)	.20***(.06)
Financial hardship → Stress	.23***(.03)	.25***(.06)	.23***(.03)

Note: S.E. = Standard error. *p<0.05, **p<0.01, ***p<0.001