Journal of Science and Technology 22 (December 2024): 57-68
ISSN 1994-0386 (Print), 2959- 3239 (Online)

DEMONSTRATING THE EFFECT OF FINANCIAL DIFFICULTIES ON MENTAL HEALTH DURING INFLATION

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DOI: https://www.doi.org/10.59125/JST.22106

ABSTRACT
This study investigates the correlation between financial difficulties resulting from inflation and mental health among Bangladeshi residents. A cross-sectional survey was conducted on 327 residents from different parts of Bangladesh between October and November 2022. A self-reported online questionnaire consisting of socio-demographic, financial, and psychometric measures (to assess depression, stress, and anxiety) was considered to accumulate information from participants. A non-parametric analysis was performed to determine the factors associated with mental health consequences. The chi-square test reveals that the levels of depression, stress, and anxiety were notably higher among the participants who reported female and lower monthly family income. However, the causal relationship between variables cannot be justified due to the cross-sectional study performed with a convenience sampling method. The study points out the contributing factors to poor mental health, which are the result of financial and economic difficulties during the period of inflation. These implications would prompt governments, healthcare providers, and financial institutions to contemplate comprehensive solutions that tackle both economic and mental health issues during inflationary periods.

Keywords: Anxiety, depression, inflation, financial difficulties; mental health, stress

INTRODUCTION
Inflation increases commodity prices every year in Bangladesh. In this situation, the actual value of money decreases. During the period of inflation, people experienced multiple financial difficulties, including but not limited to unemployment, job scarcity, income loss, and food insecurity. Being the victims of inflation, the ultra-poor have a significant number of facilities to cope with their insecure position. Even so, they have to change their consumption patterns and economic strategies, such as the withdrawal of children from school, the engagement of child labor, cutting down on health and recreation facilities, and facing financial difficulties, along with worries related to common mental health issues such as anxiety, depression, and stress. Most literature relating to inflation focuses on the determinants of inflation and financial difficulties, but it is important to examine inflation's psychological effect on populations to establish symptom mitigation strategies.

A large number of studies have stated the relationships between debt and poor mental health (Richardson *et al.* 2013), and there is clear evidence that financial recessions are correlated with increasing suicide rates and other factors such as debt, housing and employment issues, relationships, and erode purchasing power (Chopra *et al*. 2022). The negative effects of inflation on the economy as well as an increase in unemployment may have contributed to the higher levels of anxiety and depression in a unique way. Both the developed and developing countries of the world have been suffering from the problem of inflation over the last few decades. However, the intensity with which inflation oppressed the developing countries was much more serious than that suffered by the developed countries. In Sub-Saharan Africa, food constitutes 40% of household expenditures, rendering inflation in food costs particularly burdensome. Developed nations, which have robust and stable currencies (such as the U.S. dollar or Euro), face fewer risks of abrupt devaluation than poorer countries with more erratic exchange rates. Inflation disproportionately affects the poor, and as developing nations typically exhibit elevated poverty rates, a larger segment of the populace experiences the burden of escalating costs. This may result in increased unemployment rates, social turmoil, and economic instability. Developing nations are particularly vulnerable to fluctuations in food and energy prices, as they allocate a larger portion of their household income to essential commodities. Inflation significantly exacerbates the economic burden on emerging regions. During the 2007-2008 global financial crisis, poor nations experienced significant increases in food and fuel prices, leading to food riots in countries such as Haiti and Bangladesh. Historically, inflation rates in emerging nations tend to exceed those in industrialized economies, attributable to structural vulnerabilities, political instability, and less efficacious monetary interventions. In 2021, Zimbabwe and Venezuela encountered hyperinflation, whereas wealthy countries observed relatively mild inflationary rises. These reasons render inflation a more urgent and detrimental concern for emerging countries in contrast to wealthy nations, which generally possess more mechanisms to address inflationary pressures. Inflation has become a native feature of today's world, especially in developing countries (Taslim 1982). The general price level will increase, and inflation will happen when demand is increased and cannot be met by an equivalent increase in supply. Cost-push inflation is also called supply-push inflation, which is a kind of inflation that occurs because of rising costs of production (Raza *et al.* 2013). It is quite well established that inflation hampers long-run economic growth and distorts macroeconomic stability (Wahid *et al.* 2011). A number of studies have found that there is a negative correlation between inflation and growth. Inflation also adversely affects capital accumulation and investment and weakens income distribution (Shahbaz *et al.* 2010). Financial difficulties create poor mental health among students. UK-based studies examine that students have mental health problems linked to financial problems (Andrews and Wilding 2004), a high level of debt (Carney *et al*. 2005), and concern about finances (Jessop *et al*. 2005). The major findings from a meta-analysis by Richardson *et al.* (2013) showed that 41.7% of those with a mental health disorder report being in debt, in comparison to 17.5% who report having no debt. For those who were in debt, 15.5% had a mental health disorder, compared to 8.9% of those not in debts. Richardson *et al.* (2013) found a significant relationship between debt and depression, suicide completion, or attempt.

METHODOLOGY

A cross-sectional study was conducted to collect primary data among Bangladeshi residents from Rajshahi, Chapai Nawabganj, Naogaon, Rangpur, and Dinajpur between October and November 2022. The data were collected with a convenience sampling design by utilizing an online survey tool. A shareable link was generated after incorporating all questions into Google Forms. The survey link was publicized via online platforms including Facebook, Messenger, WhatsApp, and Linkedin in order to get a rapid response and cover a geographically diverse area of Bangladesh. Initially, 327 participants submitted a response. After verifying the surveys, 327 were kept for final analysis. The inclusion criteria included being (i) able to read English and (ii) able to complete the entire survey. All respondents gave virtual informed consent. Descriptive analyses were performed for categorical variables, including frequencies and percentages. The Depression, Anxiety and Stress Scale (DASS-21) questionnaire is a validated instrument that rates these 3 dimensions of mental health in adults (patients and non-patients) on a single, clear, and systematic scale (Beaufort *et al.* 2017). All items of the DASS-21 yielded Shapiro-Wilk values less than.05, indicating that they were not normally distributed. Chi-square tests, a nonparametric test, were performed to determine the hypothesis results. Cramer's V was taken into consideration for indicating the relationship between two variables. Analyses were performed using Statistical Package for Social Science (SPSS) version 25.0 (Siddique *et al*. 2021).

Determination of correlation:

Following the study of Wisniewski, (2022), the model namely Spearman coefficient. The specific model is given below:

$$r_s = 1 - \frac{6\sum d^2}{(n^3 - n)}$$

$$r_s = 1 - \frac{6\sum d^2}{n(n^2 - 1)}$$

Here,

r_s = Spearman's rank correlation coefficient of "financial difficulties"

$d^2 = (x_i - y_i)^2$ difference between each set of corresponding values

n = number of data points (Observation)

Spearman's Rho correlation coefficient, whose values can range from -1 to 1,

1 signifies the perfect positive correlation, -1 signifying the perfect negative correlation, and 0 signifying no correlation as it is neutral.

HYPOTHESES DEVELOPMENT

Gender and monthly income may have a significant impact on how inflation affects mental pressure. According to studies, women are more likely than men to experience significant levels of financial stress during inflationary times (Aydiner-Avsar and Piovani 2019). Those with low incomes, irrespective of gender, are especially susceptible to inflation since they allocate a

greater percentage of their earnings towards necessities, which are usually the most affected by price increases. Low-income individuals may experience anxiety, tension, and a sense of powerlessness due to inflationary pressures, which can worsen their general state of well-being (Patrick *et al.* 2022). Higher earners, however, might have more financial safety nets, including assets or savings, lowering the immediate mental stress caused by intensifying costs. Therefore, both gender and income play critical roles in shaping the psychological burden of inflation. The following hypotheses have been taken into consideration for identifying the effects of inflation on people's psychological health based on literature review:

H_{01}: There is no relationship between gender and mental pressure due to inflation.
H_{02}: There is no relationship between monthly income and mental pressure because of inflation.
H_{03}: There is no relationship between gender and stopping buying any specific food due to inflation.
H_{04}: There is no relationship between monthly income and stopping buying any specific food due to inflation.

RESULT AND DISCUSSION

Table 1. Demographic Characteristics of the respondents

Variable	ITEMS	Frequency	Percent	Valid Percent	Cumulative Percent
Age Group	> 20	10	3.1	3.1	3.1
	20-30	258	78.9	78.9	82.0
	31-40	43	13.1	13.1	95.1
	41-50	9	2.8	2.8	97.9
	51 and above	7	2.1	2.1	100.0
Gender	Male	156	47.7	47.7	47.7
	Female	171	52.3	52.3	100.0
Educational Qualification	Below SSC	1	.3	.3	.3
	SSC\HSC	60	18.3	18.3	18.7
	Graduate	162	49.5	49.5	68.2
	Post Graduate	99	30.3	30.3	98.5
	PHD	5	1.5	1.5	100.0
Monthly Income	Below 20000	135	41.3	41.3	41.3
	21000-31000	84	25.7	25.7	67.0
	32000-41000	50	15.3	15.3	82.3
	42000 and above	58	17.7	17.7	100.0
Marital Status	Single	233	71.3	71.3	71.3
	Married	93	28.4	28.4	99.7
	Divorced	1	.3	.3	100.0

	Below 3	23	7.0	7.0	7.0
Number of Family Members	3-5	233	71.3	71.3	78.3
	6-8	61	18.7	18.7	96.9
	9 and above	10	3.1	3.1	100.0
	Agriculture	68	20.8	20.8	20.8
Family's Income Source	Business	79	24.2	24.2	45.0
	Job	137	41.9	41.9	86.9
	Others	43	13.1	13.1	100.0
	Yes	303	92.7	92.7	92.7
Economy Affected	No	12	3.7	3.7	96.3
	Not Sure	12	3.7	3.7	100.0
	Yes	295	90.2	90.2	90.2
Decreasing Purchasing Power	No	18	5.5	5.5	95.7
	Not Sure	14	4.3	4.3	100.0
	Yes	260	79.5	79.5	79.5
Mental Pressure	No	43	13.1	13.1	92.7
	Not Sure	24	7.3	7.3	100.0
	Yes	257	78.6	78.6	78.6
Buying Less	No	45	13.8	13.8	92.4
	Not Sure	25	7.6	7.6	100.0
	Yes	200	61.2	61.2	61.2
Stop Buying	No	90	27.5	27.5	88.7
	Not Sure	37	11.3	11.3	100.0
	Yes	271	82.9	82.9	82.9
Spending Less	No	31	9.5	9.5	92.4
	Not Sure	25	7.6	7.6	100.0
Anyone Highly Affected by Inflation	Yes	227	69.4	69.4	69.4
	No	65	19.9	19.9	89.3
	Not Sure	35	10.7	10.7	100.0
Cut Off Many Students from Education	Yes	251	76.8	76.8	76.8
	No	15	4.6	4.6	81.3
	May be	61	18.7	18.7	100.0
Food Scarcity during Inflation	Yes	211	64.5	64.5	64.5
	No	30	9.2	9.2	73.7
	May be	86	26.3	26.3	100.0
Probability of Food Scarcity in Future	Yes	264	80.7	80.7	80.7
	No	12	3.7	3.7	84.4
	May be	51	15.6	15.6	100.0
Reducing Purchasing Power in Future	Yes	255	78.0	78.0	78.0
	No	16	4.9	4.9	82.9
	May be	56	17.1	17.1	100.0

Source: Authors' compilation based on questionnaire survey

A total of 327 participants (Female: 52.3%) were included in the final analysis. Most were younger, aged between 20 and 30 (78.9%). The majority were educated up to university level (49.5%), most of the family's monthly income was below Tk.20,000 (41.3%), unmarried (71.3%), members of a family ranging from 3-5 (71.3%), and most of the family's income source was a job (41.9%). 92.7% of people reported that inflation had affected their family's economic condition; 90.2% agreed that inflation had decreased their purchasing power; and the majority reported that inflation was the cause of their mental pressure (79.5%). Most participants reported that they had to buy less grocery due to inflation (78.6%), where 61.2% assured that they had to stop buying specific food items. At the same time, 82.9% of people agreed that they had to spend less during inflation, 69.4% accepted that people were highly affected by inflation, and the majority believed inflation cut off students from their education.

Hypothesis Testing

$\boldsymbol{H_{01}}$: There is no significant relationship between gender and mental pressure due to inflation.

Table 2. Chi-Square Tests for Hypothesis 1

	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	19.106[a]	2	.000
Likelihood Ratio	19.765	2	.000
Linear-by-Linear Association	10.873	1	.001
N of Valid Cases	327		

Source: Authors' calculation

Table 3. Symmetric Measures for Hypothesis 1

		Value	Approximate Significance
Nominal by Nominal	Phi	.242	.000
	Cramer's V	.242	.000
N of Valid Cases		327	

The chi-square test was statistically significant (2, N =327) = 19.106, p, with a Cramer's V of.242, indicating a small to medium relationship. So, the null hypothesis is rejected, which indicates that there is a relationship between gender and mental pressure due to inflation.

$\boldsymbol{H_{02}}$: There is no relationship between monthly income and mental pressure because of inflation.

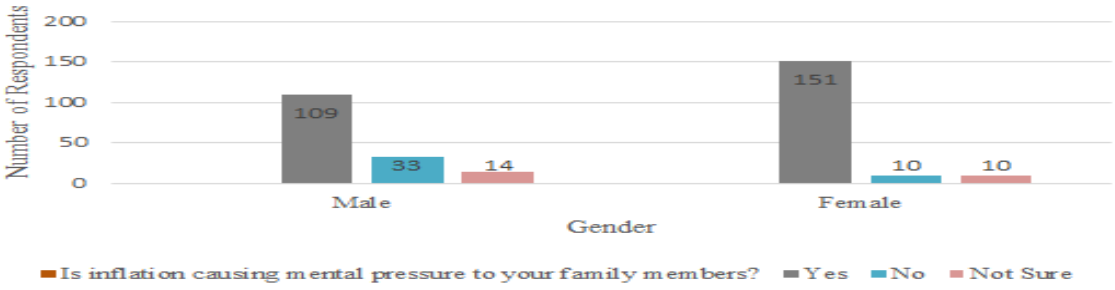

Figure1. There is a relationship between gender and mental pressure due to inflation.

Figure 1 indicates that the female respondents are more likely to feel mental pressure due to inflation than the male respondents. As we can see, the rate of female respondents is much higher and positive, indicating stress because of inflation.

***H*$_{03}$**: There is no relationship between gender and stopping buying any specific food due to inflation.

Table 4. Chi-Square Tests for Hypothesis 3.

	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	6.697[a]	2	.035
Likelihood Ratio	6.715	2	.035
Linear-by-Linear Association	2.971	1	.085
N of Valid Cases	327		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 17.65.

The chi-square test found statistically significant (2, N =327) = 6.697, p, with a Cramer's V of.143, indicating a small relationship. So, the null hypothesis is rejected, which indicates that there is a relationship between gender and stopping buying any specific food during inflation.

Table 5. Symmetric Measures for Hypothesis 3.

		Value	Approximate Significance
Nominal by Nominal	Phi	.143	.035
	Cramer's V	.143	.035
N of Valid Cases		327	

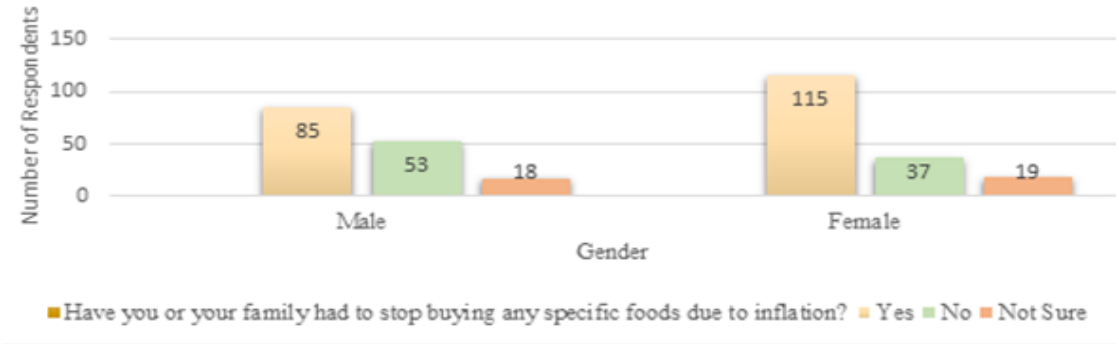

Figure 2. Relationship between gender and stop buying any specific food during inflation.

Figure 2 indicates that female respondents are more likely to stop buying specific foods due to inflation than male respondents. Females are more concerned about the items that are not much more needed. Or maybe the items are needed, but they like to skip them more than the male respondents.

H_{04}: There is no relationship between monthly income and stopping buying any specific food due to inflation.

Table 6. Chi-Square Tests for Hypothesis 4

	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	50.815[a]	6	.000
Likelihood Ratio	50.484	6	.000
Linear-by-Linear Association	13.383	1	.000
N of Valid Cases	327		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.66.

Table 7. Symmetric Measures for Hypothesis 4.

		Value	Approximate Significance
Nominal by Nominal	Phi	.394	.000
	Cramer's V	.279	.000
N of Valid Cases		327	

The chi-square test was statistically significant (6, N =327) = 50.815, p, with a Cramer's V of.279, indicating a moderate-medium relationship. So, the null hypothesis is rejected, which indicates

that there is a relationship between monthly income and stopping buying any specific food due to inflation.

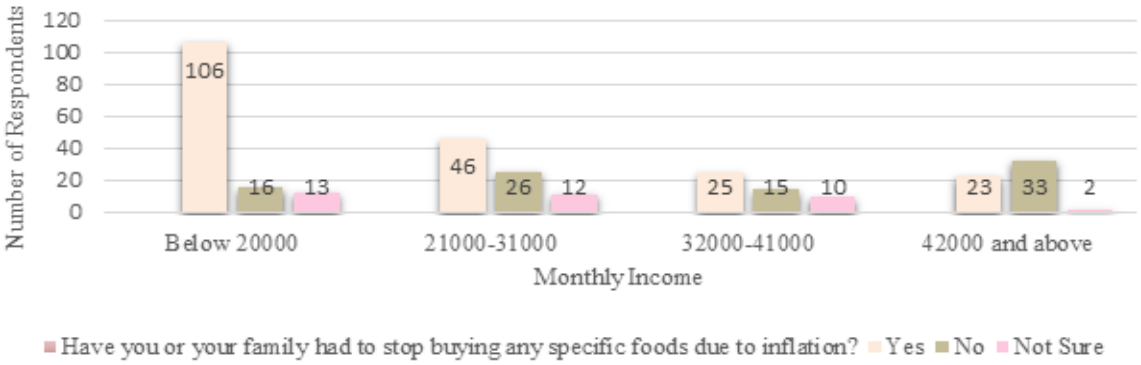

Figure 3. Relationship between monthly income and stop buying any specific food due to inflation.

Figure 3 indicates that lower-income people stop buying specific foods due to inflation more than higher-income respondents. The poorer people who earn less than Tk.20000 can't lead a healthy life. Such a laborer who earns less than Tk.10000 can't fulfill all their requirements.

Table 8. Spearman's Rho

Correlation

		Stress 1	Anxiety 1	Depression 1	Depression 2	Depression 3	Anxiety 2	Anxiety 3	Stress 2	Stress 3
Stress 1	Correlation Coefficient	1.00	.406**	.388**	.312**	.408**	.456**	.356**	.349**	.304**
	Sig. (2-tailed)		0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	N	327	327	327	327	327	327	327	327	327
Anxiety 1	Correlation Coefficient	.406**	1.000	.374**	.337**	.489**	.461**	.499**	.392**	.196**
	Sig. (2-tailed)	0.000		0.000	0.000	0.000	0.000	0.000	0.000	0.000
	N	327	327	327	327	327	327	327	327	327

Depression 1	Correlation Coefficient	.388**	.374**	1.000	.456**	.424**	.480**	.449**	.455**	.351**
	Sig. (2-tailed)	0.000	0.000		0.000	0.000	0.000	0.000	0.000	0.000
	N	327	327	327	327	327	327	327	327	327
Depression 2	Correlation Coefficient	.312**	.337**	.456**	1.000	.422**	.390**	.394**	.384**	.274**
	Sig. (2-tailed)	0.000	0.000	0.000		0.000	0.000	0.000	0.000	0.000
	N	327	327	327	327	327	327	327	327	327
Depression 3	Correlation Coefficient	.408**	.489**	.424**	.422**	1.000	.727**	.426**	.482**	.334**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000		0.000	0.000	0.000	0.000
	N	327	327	327	327	327	327	327	327	327
Anxiety 2	Correlation Coefficient	.456**	.461**	.480**	.390**	.727**	1.000	.457**	.543**	.354**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000		0.000	0.000	0.000
	N	327	327	327	327	327	327	327	327	327
Anxiety 3	Correlation Coefficient	.356**	.499**	.449**	.394**	.426**	.457**	1.000	.406**	.421**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000
	N	327	327	327	327	327	327	327	327	327
Stress 2	Correlation Coefficient	.349**	.392**	.455**	.384**	.482**	.543**	.406**	1.000	.367**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000
	N	327	327	327	327	327	327	327	327	327
Stress 3	Correlation Coefficient	.304**	.196**	.351**	.274**	.334**	.354**	.421**	.367**	1.000
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
	N	327	327	327	327	327	327	327	327	327

**. Correlation is significant at the 0.01 level (2-tailed).

Table 8 represents that there is a strong positive relationship among maximum depression, anxiety, and stress scaling data ranging from.40 to.69 (correlation coefficient) (Gardner, R. C., 2004). Other data provide a moderate positive correlation ranging from 0.30-0.39 (correlation coefficient), and a few data provide a very strong relationship among them ranging from 0.70 (correlation coefficient) (Gardner, R. C. 2004). The results indicate that people are mentally

depressed because of their financial difficulties, which are raised by inflation. People were asked several questions about financial difficulties due to inflation, and the majority responded positively. From the survey, it was found that most people are mentally depressed because of financial difficulties. Besides, female participants were more likely to have depression, anxiety, and stress compared to males. Moreover, higher odds of depression, anxiety, and stress were found among participants who reported the lowest family income, poor self-perceived health status, food scarcity at present, and the probability of food scarcity in the future. Furthermore, peoples' income level affect significantly towards financial difficulties leading to mental pressure.

CONCLUSION

The present study demonstrates that mental health disorders are prevalent among Bangladeshi residents, and financial difficulties correlate with mental health issues. Psychosocial support needs to be strengthened for people living in Bangladesh, especially for undergraduate or graduate students. As we know, the rate of suicide among varsity students is increasing at a significant level (Furr *et al.* 2001). The government, non-governmental agencies, and other workplaces should support people who have a lower income level or who can't lead a healthy life during this period. The developers need to come forward for employees or workers during the inflation period to increase their salaries or other benefits. The findings should appraise mental health strategies to enhance mental flexibility during the inflationary period in Bangladesh. Moreover, this present study will contribute to future research in this connection. Besides, the government and policymakers need to take proper initiatives so that the rate of inflation is decreased, and they should help those who lead measurable lives and are mentally sick and provide subsidies or some alternatives and proper counseling that can be effective in reducing their mental distress.

REFERENCES

Andrews B and Wilding JM. 2004. The relation of depression and anxiety to life-stress and achievement in students. British Journal of Psycholog., 95(4): 509–521.

Aydiner-Avsar N and Piovani C. 2019. The Gender Impact of Unemployment on Mental Health: A Micro Analysis for the United States. Forum for Social Economics. *50*(4): 505–529. https://doi.org/10.1080/07360932.2018.1535991.

Beaufort IN, De Weert-Van Oene GH, Buwalda VA, De Leeuw JRJ, and Goudriaan AE. 2017. The depression, anxiety and stress scale (DASS-21) as a screener for depression in substance use disorder inpatients: a pilot study. European addiction research. 23(5): 260-268.

Carney C, McNeish S, and McColl J. 2005. The impact of part time employment on students' health and academic performance: A Scottish perspective. Journal of Further and Higher Education. 29(4): 307–319.

Carr VJ, Whiteford H, Groves A, McGorry P, Shepherd AM., (2012). Policy and service development implications of the second Australian National Survey of High Impact Psychosis (SHIP). Australian and New Zealand Journal of Psychiatry. 46:708–718.

Chopra J, Hanlon CA, Boland J, Harrison R, Timpson H and Saini P. 2022. A case series study of an innovative community based brief psychological model for men in suicidal crisis. Journal of Mental Health.31(3):392–401.

Furr SR, Westefeld JS, McConnell GN and Jenkins JM. 2001. Suicide and depression among college students: A decade later. Professional Psychology: Research and Practice. 32(1): 97.

Gardner RC. 2004. Psychological Statistics Psychological Statistics Using SPSS for Windows Using SPSS for Windows. The JALT Testing & Evaluation SIG Newsletter. 8 (1): 9-10.

Jessop DC, Herberts C and Solomon L. 2005. The impact of financial circumstances on student health. British Journal of Health Psychology. 10(3): 421–439.

Patrick R, Garthwaite K., Power M, Kaufman J, Page G, Pybus K and Howes S. 2022. Covid realities: Documenting life on a low income during the pandemic. Nuffield Foundation. pp.87.

Raza SH, Javed MR. and Naqvi SM. 2013. Economic growth and inflation: A time series analysis of Pakistan. International Journal of Innovative Research & Development. 2(6): 689-703.

Richardson T. Elliott P and Roberts R. 2013. The relationship between personal unsecured debt and mental and physical health: A systematic review and meta-analysis. Clinical Psychology Review. 33(8): 1148–1162. https://doi.org/10.1016/j.cpr.2013.08.009.

Siddique AB, Nath SD, Islam MS, Khan TH., Pardhan S, Amin MZ, Amin MIA, Shawon ZBZ and Koly KN. 2021. Financial Difficulties Correlate With Mental Health Among Bangladeshi Residents Amid COVID-19 Pandemic: Findings From a Cross-Sectional Survey. Frontiers in Psychiatry. 12:755357. doi: 10.3389/fpsyt.2021.755357

Shahbaz M, Wahid ANM, Kalim R. 2010. Is inflation regressive or progressive? long run & short run: Evidence from Pakistan. International Journal of Management Studies. 17: 47-72.

Taslim MA. 1982. Inflation in Bangladesh: A Reexamination of the Structuralist – Monetarist Controversy. The Bangladesh Development Studies. 10(1):23-52.

Wahid MNA, Shahbaz M and Azim P. 2011. Inflation and Financial Sector Correlation: The Case of Bangladesh. International Journal of Economics and Financial Issues.1 (4): 145-152.

Wiśniewski J. 2022. The possibilities on the use of the spearman correlation coefficient. International Electronic Scientific and Practical Journal "WayScience. *5*(1): 151-162.

Wang Y, Di Y, Ye J and Wei W. 2020: Study on the public psychological states and its related factors during the outbreak of coronavirus disease 2019 (COVID-19) in some regions of China. Psychology, Health & Medicine. DOI: 10.1080/13548506.2020.174.