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The Effect of Overthinking on Mental Health: A Case Study from University Students in Multan District

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ABSTRACT

Overthinking is most common in students nowadays after the COVID-19 pandemic in Pakistan. The main reason behind this is due to lockdown or quarantine at home for a long time. The coronavirus infected many people some have died, and this may cause worry and ruminative thoughts that result in mental illness. This research is designed to study the significant exposure of overthinking in which we take five factors related to overthinking. For this purpose, we used a sample of 150 students from different universities in Multan via purposive and snowball sampling. The variables of the study are Rumination, Depression, Brooding, Worry, and the Mental health of the students. These were measured on the Likert scale through the questionnaire. The findings concluded that there is a positive correlation among all the variables of the study. From the correlation matrix, we see that mental health is strongly correlated with rumination and worry. Mental health is one of the causes of overthinking, it is used as a dependent variable in this study. Furthermore, a multiple linear regression model is used to check the effect of rumination, brooding, depression, and worry on mental health. Results show that rumination and worry were the significant exposures for making changes in mental health. The study concluded that as rumination and worry increase, mental health disturbs so which may result in overthinking in the students. This study will be helpful for worldwide students to overcome mental health problem and fight against overthinking during any pandemic.

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1. Introduction

Overthinking occurs when the same type of worries or negative thoughts are repeated in our minds. Overthinking destroys our minds and makes it difficult to take any decision. It can cause unhappiness, anxiety, depression, and other mental health problems. Mental health problems are related to many factors including rumination, depression brooding, worry, etc. Overthinking is a major cause nowadays after the COVID-19 (coronavirus) pandemic in Pakistan. The main reason behind this is due to lockdown or quarantine at home for a long time. The coronavirus infected many people some have died, and this may cause worry and ruminative thoughts that results in mental illness. This also produces threats to public health. The coronavirus first occurs in December 2019 in China and may cause a rapid change in almost 200 countries around the world. This viral disease not only affected our daily life routines but also created overwhelming challenges for humans all over the world. This large-scale viral pandemic had not only had psychological impacts on the human mind and also brings many sociological and financial challenges with it. As a result, the life of an extensively large population all over the world, particularly in Pakistan is badly affected. The first case of coronavirus in Pakistan was reported in February 2020. After this, a complete lockdown is implemented in the third week of March 2020. During the lockdown, all educational institutes, public places, industries, shopping malls, and restaurants were closed for a long time. There were many problems raised during the lockdown they more likely to affect the mental health of the people. All the safety measures such as wearing a mask, social distancing, and lock-down created many disturbances in the routine activities. Economical problems pressurize people which also contributed to psychological difficulties. In compliance with the lockdown, people in Pakistan have faced a serious closedown in financial activities losing their jobs or a decrease in their salaries that increased cases of suicide. The appearance of coronavirus may result in the development of fears, phobia, and anxiety among the people. All these factors suggest that there is a need to study the psychological impacts on the people after the coronavirus pandemic.

Many researchers studied different social, psychological, and medical impacts, of coronavirus in different countries, and their findings exist exist in the literature. Some of these are briefly described here. Jamshaid et al. (2020) concluded that females had more tension and depression as compared to males during the duration of the coronavirus pandemic. They used a sample of 300 international students studying in china and found that the most significant factors in mental health are rumination and worry. Tian et al. (2020) reported that 70 percent of the sample contains severe levels of psychological symptoms and concluded that the higher levels of psychological illness are present more in females and younger participants. Salman et al.(2020) explored the impact of coronavirus on university students inPakistan and concluded that the severe level of anxiety is 34% and depression is 45% in the total sample size of their study. Female participants aged less than 30 years were more depressed. They were suffering from trauma after losing their beloved ones due to the corona virus and spending more time being isolated may result in producing negative thoughts and worries. Varshney et al.(2020) studied the psychological effects of coronavirus on the people of India and revealed that 1/3 part of the sample were affected psychologically by the coronavirus and those who have a symptom of any physical illness were more prone to psychological illness. Pieter et al. (2022) aimed to find the influence of intrapersonal skills on overthinking after the coronavirus pandemic. They concluded from their study that the students who possessed intrapersonal skills were expected to be able to fight against the negative prospects of overthinking. One who has no power over his/her thought eventually result in ruminative belief and worries that affected his/her mental health.

In the meantime, World Health Organization (WHO), suggested that good mental health is essential to fight against the coronavirus pandemic and can also strengthen the immune system. Rumination is defined as the process in which one can continuously engage with negative thoughts. It is a repetition of negative thoughts that loops repeatedly in the mind and can distressing or difficult to control. Worry refers to a state of unhappiness that is caused by a problem in our life. It is an uncontrollable condition that may result from the expected threats to happen and produces negative thoughts, images, emotions, and actions repeatedly. Mental health includes the public, psychological, and emotional comfort zone of a peoples. It affects mainly how one can feel, thinks, and react in any situation. Moreover, it is also helpful to determine and control stress and create more choices relate to others.

After a literature review, this study was designed to evaluate the impact of overthinking on the mental health of university students after the coronavirus pandemic in Multan, Pakistan by taking five factors related to overthinking. The variables of the study are Rumination, Depression, Brooding, Worry, and the Mental health of the students. The significance of the study is that there is no work present in Pakistan in which all these variables are simultaneously studied. We suggest from this study that the findings will help to deal with the psychological burden and contribute to planning effective strategies for the future.

2. Methods and Materials

2.1 Data Collection

A quantitative research design is used in this study with a purposive and snowball sample of 150 respondents. The target population of the study is university students in Multan Pakistan with the age ranging between 16 to 40 years. The data was collected through a questionnaire. An online survey was also conducted by using the Google form application and sending links to the participants via WhatsApp groups. The questionnaires were filled out by 150 respondents. After this, the final data were analyzed for results computation.

2.2 Instrument

The questionnaire was prepared to capture general characteristics of mental health and worries. The questionnaire consists of 16 items but in this study, we convert all 16 items into five variables. The question added to this questionnaire was a short form with a three-point Likert scale. A high score on the scaling indicates a high level and a low score will indicate a lower level. The questionnaire had two sections. The first section concerned demographics such as age, gender, area, and education level. The second section concerned views about different overthinking beliefs such as yes, no, and some time. This section includes 16 items related to different factors/variables such as rumination, depression, brooding, worry, and mental health which are the variables used in this study. The reliability of these items is tested by Cronbach's alpha.

3. Results and Discussion

To answer the research questions of this study, some techniques were adapted with the help of Statistical Package for Social Sciences version 22 (SPSS) software. Summary statistics containing (frequencies, percentages, mean and standard deviation) were calculated to determine the demographic characteristics of the sample. To find the nexus between the variables Pearson correlation has been utilized in this study. Linear regression and one-way ANOVA were also applied.

Table 1. Summary Statistics of Demographic Variables of Study (*n* = 150)

S. No.	Demographic Variable	Categories	Frequency	Percentage
1	Age	16 to 20	38	25.3%
		21 to 30	70	46.7%
		31 to 40	42	28.0%
2	Area	Urban	96	64.0%
		Rural	54	36.0%
3	Gender	Male	73	51.3%
		Female	77	48.7%
4	Education Level	Higher Secondary Master	66	44%
			84	56%

Table 1 shows summary measures of the demographic characteristics of the study by using a sample of 150 participants including their age, area, gender, status, and education level. Table 1 also shows the number of participants falling into different categories of the variable. We see that most participants (46.7%) belong to the age group 21-30 years and 64% belong to urban areas in this study. The percentage of women participating is 51.3% and the percentage of men participating is 48.7%. The majority of participants have master-level qualifications.

Table 2. Percentages of the Responses of all the Variables of Study (*n* = 150)

Variables	Questions	Yes (%)	No (%)	Sometime (%)
Rumination	Are you suffering from overthinking?	46%	21.3%	32.7%
	Do you think more than you do?	44.7%	25.3%	30%
	Thought to intrude into your mind?	44%	21.3%	34.7%
	Do your thoughts repeat themselves?	42.0.%	24.0%	33.3%
	You stuck up thinking issue and can't move on?	24.7%	33.3%	42.0%
Depression	Do your thoughts take up all your attention?	43.1%	23.3%	35.3%
	Do you analyze everyone?	29.3%	50.0%	20.7%
	Do you not let go of things easily?	39.3%	34.0%	26.7%
	Do you always think about what they meant when they said this?	50.7%	24.7%	24.7%
Brooding	Do you easily distract?	39.3%	37.3%	23.3%
	Have your friend told you that you think too much?	40.0%	38.0%	22.0%
Worry	Do you second guess your decision?	50.7%	24.7%	24.7%
	Do you think about an argument or decision that happens before?	54.0%	23.3%	22.7%
	Do you keep fearing what would happen if you did this?	50.0%	26.7%	23.3%
Mental Health	Do you take more time than other people to dress up?	44.7%	34.7%	20.7%
	Do you check the door lock several times before leaving?	42.7%	32.7%	24.7%

Table 3. Overall Reliability Statistics (*n* = 150)

Cronbach's alpha	No. of items
0.787	16

Table 3 shows the overall reliability of the questionnaire. The Cronbach's alpha value is calculated to check the internal consistency and reliability of all the items. The alpha value is found to be 0.787, which is greater than 0.50, indicating good consistency between the various items. Further, we convert all 16 items into five variables (rumination, depression, brooding, worry, and mental health) that are of basic interest to this study. The summary statistics of all variables are given in Table 4.

Table 4. Summary Statistics of all the Variables

Variables	Mean	S.D	Cronbach's alpha
Rumination	5.8600	1.68702	0.442
Depression	9.3533	2.61933	0.572
Brooding	5.6267	1.68510	0.576
Worry	5.1600	1.82848	0.589
Mental Health	3.5800	1.36726	0.668

Table 4 shows the mean, standard deviation, and alpha reliabilities of all the study variables. The mean score and standard deviation of depression are much high than other variables of the study. The Cronbach's alpha value is calculated to check the internal consistency and reliability of all the variables used in this study. The alpha value is found to be > 0.50 for depression, brooding, worry, and mental health, which indicates good consistency between the various items of the scales ranging from 0.572 to 0.668. The alpha value is found to be < 0.50 for rumination, which is not consistent.

Table 5. Correlation Matrix between all the Variables (*n* = 150)

	Rumination	Depression	Brooding	Worry	Mental Health
Rumination	1	0.462	0.314	0.386	0.294
Depression	0.462	1	0.447	0.376	0.122
Brooding	0.314	0.447	1	0.361	0.237
Worry	0.386	0.376	0.361	1	0.384
Mental Health	0.294	0.122	0.237	0.384	1

Table 5 present the correlation matrix between all the variables. It can be seen that all the variables are positively correlated. Rumination has positive relationship with depression (0.46), brooding (0.314), worry (0.386) and mental health (0.294). Depression has a moderate positive relationship with brooding and worry and a minor relationship with mental health. Similarly, all remaining variables are moderately correlated with each other. We have also fitted a regression model to these variables to check the effect of Rumination, depression, brooding, and worry on mental health.

Table 6: Estimation Results of Regression Model

Model	Coefficient estimate	S.E	t-Statistic	p-Value
(Constant)	1.547*	0.472	3.277	0.001
Rumination	0.162**	0.071	2.290	0.023
Depression	-0.076	0.048	-1.588	0.114
Brooding	0.101	0.070	1.451	0.149
Worry	0.237*	0.064	3.711	0.000

Note: "*, ** and *** shows 1percent, 5 percent and 10 percent level of significance respectively."
The estimated regression model may be expressed as
Mental health = 1.547 + 0.162rumination - 0.076depression + 0.101brooding + 0.237worry

In Table 6, the results of multiple regression analysis show the effect of rumination, depression, brooding, and worry on mental health. The estimates of the coefficients show that rumination has significant effect on mental health (coefficient = 0.162, p-value = 0.023 < 0.05). Similarly, worry is also significant effect on mental health (coefficient = 0.237, p-value = 0.000 < 0.05). Furthermore, it can be seen that depression and brooding had insignificant effects on mental health. Further, we check the overall significance of the multiple regression model by using a one-way analysis of variance (ANOVA).

Table 7. One Way ANOVA of the Multiple Regression Model (*n* = 150)

Model	SS	*D.f*	MS	F-Statistic	P-Value.
Regression*	53.569	4	13.392	8.632	0.000
Residual	224.971	145	1.552		
Total	278.540	149			

Table 7 shows the ANOVA table of the above multiple regression model. Since our calculated value of F-Statistics falls in the critical region so, we reject our null hypothesis and concluded that the model is overall significant p-value is 0.000 < 0.05.

4. Conclusion

This study is used to find the significant predictors of mental health that cause overthinking. We check the effect of rumination depression, brooding, and worry on the mental health of the students in Multan, Pakistan after the COVID-19 pandemic. For this purpose, quantitative research is used and samples of 150 students were taken via purposive sampling and snowball sampling. Data were collected through a questionnaire. The Cronbach's alpha value is found to be 0.787, which is greater than 0.50, and indicates good consistency between the various items. The correlation matrix is used to find the correlation between the study variables. It is concluded from the correlation matrix that rumination has a positive correlation with depression, brooding, worry, and mental health. We see that mental health is also strongly correlated with rumination and worry. Mental health is used as a dependent variable in this study. Furthermore, a multiple linear regression model is used to check the effect of rumination, brooding, depression, and worry on mental health. We see that both variables (rumination and worry) had a significant effect on mental health and depression and brooding produce an insignificant effect on mental health. The study concluded that as rumination and worry increase, mental health disturbs so which may result in overthinking in the students. This lead to the conclusion that rumination and worry lead to produce negative thoughts in

the minds of the students. So this can lead to the cause of overthinking. This may also result in poor mental health in the students.

5. Recommendations

- First suggestion for future research is to collect more data from different universities all over Pakistan.
- For more reliable results sample size should be increased for future work.

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