

Infodemic Accelerates Psychological Effect in Covid-19 Pandemic: A Cross Sectional Study

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Abstract

An infodemic is an influx of wrong or deceptive information on social media during a pandemic. It results in misunderstandings and risk-taking actions that have a negative psychological effect. The Infodemic intensified the effects of the pandemic. This study aimed to evaluate how Infodemic made people squandered, which caused psychological damage. Primary and secondary data have been used, and 310 usable questionnaires have been collected for this study using a purposive sampling technique. For data analysis, SPSS-22 software has been used. The study found that people are bewildered, causing Infodemic rapidly spread on digital platforms and creating psychological pressure. The study has recommended that all netizens should apply common sense to believe any news, check the authenticity of the news through various prescribed websites, and talk with the concerned authority for clarification so that they could clog any unwanted situation. Our findings give insights into how Infodemic and psychological effects are closely associated with handling such situations at the initial phase. These findings also could assist us in intuitively comprehending the effects of Infodemic spread on people's emotions during the Covid-19 pandemic and assist the government in reducing panic.

Keywords

Infodemic, Psychology, Pandemic, Covid-19

1. Introduction

The world has gone through a period of intense manifestation of the coronavi-

rus; currently, the matter is going on somewhat usually. But it has wreaked havoc on people's lives in several ways (Saifuzzaman et al., 2021). However, this virus erupted in Wuhan, China, in 2019 and became a global pandemic on 11 March 2020. Health hygiene from WHO has been instructed to follow from every class of society globally to limit transmission of this virus and give enough space for the researchers to produce any effective and eminent remedy (Bodrud-Doza et al., 2020). The world has witnessed a new challenge after the Second World War that shook the global health structure. On the other hand, the Infodemic worsened the situation, which intensified the escalation of this pandemic (Pazzanese, 2020). According to WHO, "An Infodemic is too much information including false or misleading information in digital and physical environments during a disease outbreak". However, since the pandemic outbreak, various types of fake news have spread worldwide. The Infodemic amid the pandemic is not only causing upset but also creating more violence due to the spread of fake news through social media (WHO, 2020). This platform includes Facebook, Twitter, Instagram, Pinterest, Snapchat, TikTok, YouTube, and other means that provide direct access to unprecedented content. All this content was mixed with both true and false information that spread everywhere fast. Such news has several sociological repercussions that have the potential to negatively affect society and thwart governmental actions (Cinelli et al., 2020). General people confuse differentiating between fact and false news. Spreading such news is a big crime that creates social intolerance and impacts one's psychology. Conversely, the Covid-19 pandemic is the first pandemic where technology has been used on a large scale to keep people harmless, productive, informed and connected under an umbrella. Simultaneously, this technology has been amplifying the Infodemic that continues to undermine the global response and jeopardizes steps to curb this pandemic (WHO, 2020). The Covid-19 pandemic is unique compared to any other pandemic that grapples the world. The abundance of information that anyone received in the world acted as a double-edged sword as some information assisted individuals in allaying the anxiety and stigma and motivated them for pertinent Covid-19 behaviour; however, on the other contrary, the same information acted the opposite and created a lot of undesirable difficulties in the community (Samal, 2021). Again, fake news has circulated faster than good news worldwide, which confused people and interrupted taking appropriate action (Human Rights Watch, 2020). Thousands of fake news about the pandemic make public life more annoying and demoralizing (Pazzanese, 2020). The spread of misinformation, fake news, and fabricated news can commence mass panic that adversely affects individual psychology (Human Rights Watch, 2020).

Even many authorities worldwide are concerned about how people react to their Covid-19 protocol initiatives. Along with governments, the World Health Organization (WHO) reportedly warned not to be misguided by Covid-19-related misinformation. They also encouraged the global government to exercise caution regarding bogus news stories on Covid-19 that could worsen already horri-

ble situations. On the other hand, spurious news quickly spread in Bangladesh following the death of the first coronavirus patient on March 18, 2020. People began disseminating vivid news that focused on the first death. Later, a call record of a doctor spread everywhere who was providing misinformation concerning Covid-19. Law enforcers detained the alleged physician for spreading rumours through Facebook in Chittagong. The doctor accused the government of concealing 18/19 deaths in Chattogram caused by the coronavirus in a widely shared video (Panday & Kaoum, 2020). However, it is tough to understand the fact of news or prevent the spread of rumours that continuously hammer anyone. From this perspective, this study intends to unlock how Infodemic impacts one's psychology which interrupts taking any appropriate actions.

2. Research Objective

The study's primary purpose was to evaluate various psychological impacts of Infodemic on people during the Covid-19 pandemic and recommend ways to face these challenges.

3. Research Question

RQ1: How does Infodemic create psychological pressure during the pandemic?

RQ2: Does Infodemic interrupt take an appropriate decision during the pandemic?

RQ3: What initiatives can any individuals or concerned authorities take to stop Infodemic?

4. Literature Review

The term "Infodemic" combines the terms "information" and "epidemic" that refers to an excess of information (both true and false) that makes it difficult for people to access reliable sources and obtain valid guidance when it becomes most necessary for decision-making (Paho, 2020). Since the Covid-19 outbreak, it has gained new international attention and become a global pandemic. To stop its expansion, the WHO has given specific health recommendations. Numerous governments have enacted quarantine, social seclusion, and other health precautions to stop its spread worldwide. Social media and mass media both played crucial roles in the rapid global dissemination of this knowledge. Since there was initially little information available regarding the virus, misinformation, fake news, and manufactured news transmitted via digital media platforms led to widespread panic among the populace. The rapid spread of the Infodemic causes global concern to the government and public health authorities. Moreover, various wrong information and unauthentic content regarding Covid-19 spread rapidly, creating anxiety and fear among people, and predisposing them to various mental health conditions (Srivastava et al., 2019). The Covid-19 pandemic has not only caused significant challenges for health systems globally but also fueled the surge of numerous misinformation, hoaxes, and rumours of prevention and

cure of the disease. Several mishap incidents have been reported globally by dint of rumours (Tasnim et al., 2020). Some myths roamed around us regarding Covid-19, like drinking alcohol, spraying alcohol, or chlorine on the body, eating garlic, taking a hot bath, and so on (The Economic Times, 2020). News spread that highly concentrated alcohol could disinfect the body and kill the virus. This single piece of wrong information claimed at least 800 lives globally. Moreover, 5876 people were admitted to hospital, and 60 more developed complete blindness caused by another source of misinformation related to a cure for coronavirus disease 2019 (Covid-19). In Angola, it spreads that Covid-19 doesn't kill anybody in Angola as people were immune due to malaria. Another popular myth spreads in Angola that the child polio vaccine is effective for Covid-19. Later, the concerned authority receives several daily calls from the people and clarifies the facts (WHO, 2020). However, this pandemic has affected everything from education, jobs, and business to trade. On the other hand, various negative news has intensified this damage (Panchal et al., 2021). Various news has been spread about Covid-19 around us that creates more confusion and badly leads to psychological stress. Plenty of information has led to misperceptions among people on the causes and cures for the disease. The World Health Organization (WHO) exposed that there is a "massive Infodemic" of incorrect and correct information in the media about Covid-19. As the Covid-19 pandemic continues to cause illness, distress, and deaths, so is society flooded with uncertain, flip-flopping, and confusing descriptions (Olatunji et al., 2020).

5. Gap of the Study

Several research articles have been reviewed in Bangladesh and other countries. Context on Infodemic and its related perspectives like Paho, 2020; Olatunji et al., 2020; Tasnim et al., 2020; Al-Zaman, 2020; Islam, et al., 2020; Hasan et al., 2021. Various researchers highlighted Infodemic in their country context globally, which does not match our social context. Conversely, this kind of study is very limited in Bangladesh. So, this sector still needs to be explored. Here is a gap in the study. This study is an attempt to fill a gap.

6. Research Hypothesis

H_1 : There is a significant relationship between Fabricated News and Psychological Impact.

H_2 : There is a significant relationship between Rootless Idea and Psychological Impact.

H_3 : There is a significant relationship between Fictitious Belief and Psychological Impact.

7. Conceptual Framework

After reviewing various kinds of literature, a conceptual framework has been designed to justify the factors that impact one's psychology caused by the info-

demic. The framework is given below.

Figure 1 shows that Fabricated News, Rootless News, and Fictitious Belief are independent variables and Psychological Impact is dependent variable.

Variable

Varibale used in this study.

Name of the Variables	Definition of the Variables	Literature Support
Fabricated News	It is a kind of news where <i>false information is passed off as factual</i>	Barura et al., 2020; Al-Zaman, 2020; Islam et al., 2020
Rootless News	It is a type of news that spreads false or exaggerated information about something which may be intentional or unintentional.	Akon & Bhuiyan, 2020; Islam et al., 2020
Fictitious Belief	Something that is false or does not exist, although some people claim that it is accurate or exists.	Al-Zaman, 2020; Akon & Bhuiyan, 2020; Islam et al., 2020
Psychological Impact	It refers to any factor impacting or arising in the mind related to a person's mental and emotional state.	Alkhamees et al., 2020; Aylie et al., 2020

8. Methodology

We conducted a cross-sectional self-administered survey from April 1 to 30, 2022, when the effect of this virus has been reduced somewhat so that real experiences of the people can be obtained. A total of 350 respondents participated in the survey, and 310 usable questionnaires proceeded to the next stage. SPSS' (Statistical Package for the Social Sciences), version 22, has been used to analyse the data.

8.1. Sample Size

A purposive sampling method was used to reach the target respondents. The people who experienced this challenge have been encouraged to participate in the survey. Participants below 18 are discouraged from participating in the survey. Participants in the survey received no incentives.

8.2. Questionnaire

To examine the impact of Infodemic on psychology, a 25-item questionnaire has been adopted. The survey was administered in English, and each question used a

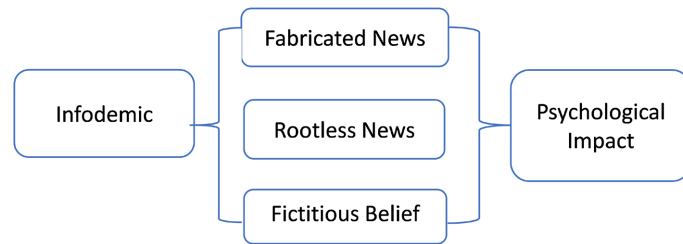


Figure 1. Conceptual framework.

Likert scale. Along with a hard copy of the questionnaire, a web-based self-administered survey created on Google forms was formed and distributed to reach the target respondents. The first part of the survey obtained participants' demographic information. The second part included various Infodemic-related questions.

8.3. Sources of Data

The study is based on primary and secondary sources of data. Primary data has been collected from the respondents through interview to bring the real picture. Besides, newspapers, reports, books, or relevant issues have been also studied as secondary sources.

8.4. Response Rate

Questionnaire	Number
Distributed Questionnaires	350
Returned Questionnaires	325
Usable Questionnaires	310
Unusable Questionnaires	15

8.5. Consent and Ethical Consideration

The participants responding to the question obtained voluntary online consent to express their willingness to attend the study via Google forms. The issues related to quality control were given careful consideration continuously throughout the field operation.

9. Data Analysis and Findings

Table 1 shows that more than 60% of the respondents were male, and 58.7% were unmarried and participated in the study. Besides, 23.5% of respondents were unemployed, 31.6% were aged between 21 - 30, and 29.4% were studying in honours.

Table 2 shows that while analyzing the results of the Bartlett's Test of Sphericity in the Table, it is seen that approximate chi-square statistics is with 190 degrees of freedom, which is significant at 0.05 level. This means that null hypothesis of the population correlation matrix is an identity matrix, which is

Table 1. Demographic information of the respondents (N = 310).

Criteria	Attributes	N	Percentage
Gender	Male	188	60.6
	Female	122	39.4
Employment status	Govt.	41	13.2
	Private	52	16.8
	Housewife	52	16.8
	Unemployed	73	23.5
	Student	48	15.5
	Business	44	14.2
Age	20 or less	63	20.3
	21 - 30	98	31.6
	31 - 40	55	17.7
	41 - 50	55	17.7
	51 - 60	19	6.1
	61 - 70	13	4.2
	71+	7	2.3
Marital Status	Unmarried	182	58.7
	Married	128	41.3
Level of Education	SSC or less	25	8.1
	HSC	85	27.4
	Honors	91	29.4
	Masters	73	23.5
	Higher	36	11.6

Source: Author's field study.

Table 2. KMO and Bartlett's Test.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.930
	Approx. Chi-Square	11337.384
Bartlett's Test of Sphericity	df	190
	Sig.	0.000

rejected by Bartlett's test of Sphericity. So, the result of Bartlett's test of sphericity is significant suggesting that the population was not an identity matrix. Therefore, the Bartlett's Test of Sphericity is significant.

Table 3 shows Cronbach's Alpha score for the overall measure and each scale is the commonly used reliability statistic to assess if the survey questions consistently produced reliable answers. The scales were assessed using the standard criterion of = 0.70 (Hair et al., 1995).

Table 3. Reliability of the factor.

Variable	Item	Short form	Cronbach's Alpha (Individual Variable)	Cronbach's Alpha (Overall)
Fabricated News	6	FN	0.875	0.943
Rootless Idea	8	RI	0.735	
Fictitious Belief	6	FB	0.950	

*Note: Factor loading less than 0.50 have not been considered/reproduced.

Table 4 shows component matrix, which displays correlations, represents the unrotated component analysis factor matrix. These factor loadings show how variables are closely connected to each factor. Using Exploratory factor analysis (EFA) techniques, we have to delete some factors because factor loading less than 0.5 did not consider or reproduce.

Table 5 shows all the correlations between the variables. To proceed with any multiple regression analysis, it is mandatory to check whether dimensions are correlated or not. This table represents that all the variables named Fabricated News, Rootless Idea, Fictitious Belief and Psychological Impact are positively correlated to impact of fabricated news and all are statistically highly significant at a 1% level of significance.

Table 6 shows that the p-value has been found to be less than 0.00. That means the null hypothesis may be rejected at 5% significance level. So, it can be concluded that Fabricated News negatively impacts psychology.

Table 7 shows that the p-value has been found to be less than 0.00. That means the null hypothesis may be rejected at 5% significance level. So, it can be concluded that Rootless Idea negatively impacts psychology.

Table 8 shows that the p-value has been found to be less than 0.00. That means the null hypothesis may be rejected at 5% significance level. So, it can be concluded that fictitious belief negatively impacts psychology.

Results of the hypotheses

	Hypotheses	Findings
H_1	<i>Fabricated News during pandemic impact on Psychological Impact</i>	<i>Accepted</i>
H_2	<i>Rootless Idea during pandemic impact on Psychological Impact</i>	<i>Accepted</i>
H_3	<i>Fictitious Belief during pandemic impact on Psychological Impact</i>	<i>Accepted</i>

10. Discussion of the Findings

From the data analysis, the researchers have revealed the key findings of the study, which are given as follows:

a) In this study, 310 usable questionnaires were taken, and 188 male and 122 female respondents participated. Among the respondents, various categories filled up the questionnaires online and offline, where 73 unemployed people

Table 4. Factor analysis.

Components	Factors	Short form	Factor 1	Factor 2	Factor 3
Fabricated News	Drinking methanol, bathing in hot water, spraying alcohol, or chlorine on the skin	FI_1	0.912		
	Controlling weapon of developed countries	FI_2	0.911		
	Thankunipata kills Covid-19 virus	FI_3	0.939		
	Kalazira and Garlic prevents coronavirus	FI_4	0.910		
	Corona virus lays egg on throat	FI_5	0.911		
Rootless Idea	Normal life will not come ever	RI_1		0.905	
	Corona virus would not in BD due to its temperature	RI_4		0.803	
	Coronavirus spread in cold water	RI_7		0.869	
	Hot water kills coronavirus	RI_8		0.914	
Fictitious Belief	Certain caste of people will not be affected	FB_1			0.866
	Coronavirus is a myth mainly to control people	FB_2			0.872
	Various religious misconceptions	FB_3			0.853
	Punishment of God or revenge of nature	FB_4			0.850
	Corona virus was created in a lab to harm economy of a specific country	FB_5			0.941
	Muslims will not get corona	FB_6			0.909

*Note: Factor loading less than 0.50 have not been considered/reproduced.

Table 5. Values of correlation coefficient among the variables.

		Correlations			
		FN	RI	FB	PI
FN	Pearson Correlation	1			
	Sig. (2-tailed)				
RI	Pearson Correlation	0.800**	1		
	Sig. (2-tailed)	0.000			
FB	Pearson Correlation	0.698**	0.867**	1	
	Sig. (2-tailed)	0.000	0.000		
PI	Pearson Correlation	0.844**	0.797**	0.826**	1
	Sig. (2-tailed)	0.000	0.000	0.000	

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

Table 6. The one-way analysis of variance on the impact of Fabricated News on Psychological during pandemic.

ANOVA					
Psychological Impact					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	244.240	1	244.240	546.884	0.000 ^b
Within Groups	137.554	308	0.447		
Total	381.794	309			

Table 7. The one-way analysis of variance on the impact of Rootless Idea on Psychology during pandemic.

ANOVA					
Psychological Impact					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	185.786	1	185.786	291.939	0.000 ^b
Within Groups	196.007	308	0.636		
Total	381.794	309			

Table 8. The one-way analysis of variance on the impact of fictitious belief on psychology during pandemic.

ANOVA					
Psychological Impact					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	272.196	1	272.196	764.948	0.000 ^b
Within Groups	109.597	308	0.356		
Total	381.794	309			

participated, and a significant number of respondents were between the ages of 21 and 30. Besides, 182 respondents were unmarried, and 91 were enrolled in honours in their education hierarchy.

b) Based on the study, three independent variables and one dependent variable have been set, and all were found significant. The factors analyzed here, taken from various literature reviews, impact one's psychology. This study found that people already felt pressure, nervousness, and loss of productivity.

c) After analyzing the data, the researchers have identified in this study that people are very much confused about fake news spread in social media during this pandemic. This kind of news made them depressed and influenced their taken decisions. They were too scared about their actions. Research shows that all those people are mentally broken. Corona has affected all walks of life in various ways, and Infodemic has intensified that effect that debilitated their mental strength. A study found that online misinformation has become commonplace in Bangladesh, potentially threatening public health communication during the Covid-19 pandemic (Al-Zaman, 2020). But this study identified the negative effect of misinformation on people's psychology. Another research found that rumour increases anxiety among people, but older adults directly affect rumour anxiety instead of young adults (He et al., 2019). On the other hand, this study found that all classes of people have psychologically suffered from Infodemic.

d) From the data analysis, the researchers have revealed that people are already going through extreme emotional distress in different ways due to Covid-19. That distress has increased due to various rumours. All these rumours

led them in the wrong direction, plunged them into more despair, and added to their misery.

11. Conclusions and Recommendations

This study has set three hypotheses, and all were found significant. Through the analysis, it has been found that people have felt severe psychological pressure due to massive fake news or fabricated news. Modern technology gave a new pace to spread fake news more rapidly. Various governments applied strict measures to stop misinformation, and even the WHO also warned to be cautious about Infodemic. Covid-19 related fake news are presented in social media in a colourful way that frustrates general people. In the meantime, many people have died or suffered in various ways due to the Infodemic. Infodemic has been identified as an essential factor in increasing human misery through this study. The study has developed some recommendations based on the upper sections, like conducting awareness-raising programmes on a large scale among people offline and online. It also can be conducted in the place of worship for collective effort. This study also has recommended strengthening rigorous monitoring system by the government, involving, and encouraging the community for collective effort, arranging punishment for rumourmongers, informing people how to check any news if they doubt it, encouraging people to be cautioned to share any information, encouraging people to use common sense before believing or sharing in social media and so on.

12. Limitations and Future Research

There are certain limitations associated with this research that need to be addressed. Literature suggests that it needs vast study on how Infodemic affects on one's psychology.

1) This study comprises sample size (N = 310) which is not adequate for representing this sector.

3) Researcher has led quantitative study while in future qualitative study will give more in-depth knowledge.

3) More variables can be added in future for comprehensive study.

4) This study can be resourceful as a guideline for further studies. Here, only ANOVA a test was conducted to find the relationship among the variables. Further statistical Analysis can be conducted, keeping study as a basic framework.

Author's Contributions

All authors are contributed equally.

Conflicts of Interest

The authors declare no conflict of interest.

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