

Vaccination willingness among undergraduates: Role of conspiracy mentality and belief in Covid-19 vaccine conspiracies

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Abstract

Objective: To investigate willingness to vaccination, conspiracy mentality, and belief in vaccine conspiracies among undergraduate students as well as the level of adherence to non-pharmaceutical interventions during the coronavirus disease-2019 pandemic.

Method: The cross-sectional study was conducted from January to June, 2021, and comprised undergraduate students from Islamabad and Rawalpindi, Pakistan. Data was gathered using the General Conspiracy Mentality Scale and the Belief in Vaccine Conspiracies Scale. Willingness for vaccination and degree of adherence to non-pharmaceutical interventions was measured on a 5-point rating scale. Data was analysed using SPSS 26.

Results: Of the 300 subjects, 154 were males and 146 were females. The overall mean age of the sample was (23.47 ±2.17). A sample of 121(40.33%) respondents believed in vaccine conspiracies, while only 83(27.66%) showed disagreement. High scores on conspiracy mentality ($p<0.020$) and belief in vaccine conspiracies ($p<0.006$) were associated with little adherence to behavioural recommendations for coronavirus disease-2019. High scorers on conspiracy mentality ($p<0.006$) and belief in vaccine conspiracies ($p<0.004$) had less willingness for vaccination. There was no significant difference in the conspiracy mentality and belief in vaccine conspiracies with reference to gender ($p>0.05$).

Conclusion: Medical practitioners and healthcare organisations need to understand the connection between belief in vaccine conspiracies and related vaccine resistance and noncompliance with behavioural recommendations in the face of a pandemic.

Keywords: Vaccination, Intentions, Vaccine conspiracies, Adherence to NPI, Undergraduates. (JPMA 72: 2482; 2022)

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Introduction

The World Health Organization¹ (WHO) declared the coronavirus disease-2019 (COVID-19) a pandemic in March 2020. This created a global atmosphere ripe for conspiracy theories to emerge as they typically surround significant events where mass action or government regulations are enforced, such as in crisis events where conspiracy breeds uncertainty and thus achieves a stronghold in conspiracy mentality as well. Although the common theme in all these conspiracy theories was that the virus was a scam used to exploit the general masses for the secret financial or political benefit of an influential few, such as the virus being a bioweapon engineered by Western intelligence agencies.²

Conspiracy mentality is understood as an over-arching worldview centred on the idea of distrust or paranoia towards government-led services and institutions, feelings of political powerlessness and cynicism, and a general defiance of authority.³ Such a mindset largely and consistently endorses conspiracy theories compared to circumstantial or conditional conspiracy thinking. One

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would be predicted to hold a strong belief in a certain conspiracy theory, if they already believe another conspiracy theory, which speaks largely of their mindset as people instead of the theory itself.^{4,5} Conspiracy mindset is also associated with psychological factors, such as, active imagination,⁵ schizotypal tendencies,⁶ and low self-esteem,⁷ that would facilitate and sustain the mindset within individuals.

Belief of the general population in certain conspiracy theories has led to a difference in their degree of adherence to the government-implemented preventive health protocols in the COVID-19 pandemic. Those high in conspiracy theorising were less likely to follow normative or government-issued methods of preventive care around COVID-19 and would be more likely to engage in non-normative behaviours to tackle with the pandemic.⁸ Perceived personal risk of contracting COVID-19 virus mitigates the non-normative behaviours in those who believe in conspiracy theories and lead these individuals to adopt normative preventive measures.⁸ This further reinforces the understanding of conspiracy beliefs as self-serving and self-protective, and so compliance to normative methods increases as personal risk of death increases in a crisis.

With the conspiracy theories widespread in the pandemic and actively influencing the opinion and behaviours of different populations globally, their attitudes towards vaccination against COVID-19 are also evidenced in some parts of the world.^{9,10} Multiple factors, including social, psychological, political and demographic, have been studied which may have influenced the willingness to vaccination in different populations.¹¹ Based on research evidence received so far, the uncertainty faced by the larger community, concerning the effects of the virus and vaccination preferences for different populations, has set the stage for conspiracy mentality to take root in people's willingness to go for vaccination. Such a factor is estimated to have significantly influenced the course COVID-19 pandemic will take going forward.

Within the current context of COVID-19 pandemic, more research is needed to explore conspiracy mentality and belief in vaccine-related conspiracies which may affect non-pharmaceutical interventions (NPIs) compliance behaviour along with willingness for vaccination. The current study was planned to find out the frequency of people having belief in COVID-19 vaccine conspiracies, degree of vaccine resistance, and the level of adherence to COVID-19 NPI.

Subjects and Methods

The cross-sectional study was conducted from January to June, 2021, after approval from the ethics review committee of COMSATS University, Islamabad, Pakistan, and comprised undergraduate students from Rawalpindi and Islamabad. The sample was raised using convenience sampling technique from among undergraduate regardless of gender and academic programme. Those not willing to participate were excluded.

After taking informed consent from the subjects, data was collected physical either physically or online. Demographic data included the respondents' age, gender, department, and some information about their family including any incidence of illness/death because of COVID-19. Also used was the Generic Conspiracist Beliefs

Scale (GCBS)¹² which is a 15-item scale to assess the general propensity to believe in conspiracy theories unrelated to COVID-19. Things occur as claims within the measure (e.g., "Secret organisations communicate with extra-terrestrials, but keep this truth hidden from the public"). Each object was a generic belief that could be used to endorse belief in a wide range of real conspiracy theories. Participants used a 5-point Likert scale to answer, ranging from 1 = certainly not true to 5 = definitely true. The GCBS has impressive psychometric properties.¹²

The Vaccine Conspiracy Belief Scale (VCBS) was also used which is a 7-item scale that includes questions about vaccine-related conspiracy beliefs.¹³ On a 5-point scale ranging from "strongly disagree" to "strongly agree", participants indicated how much they agreed or disagreed with a given statement. High score is indicative of higher belief in vaccine conspiracies. Factor analysis revealed that VCBS is one-dimensional and has high internal consistency ($p=0.937$).¹³

Willingness for Vaccination¹⁴ was measured using a single-item to be rated on 5-point rating scale. It said, "If you get a chance to make yourself vaccinated against COVID-19, will you?"

Degree of adherence to COVID-19 NPIs, like wearing a mask, social distancing, handwashing, staying home when sick, etc., was measured on a self-reported 5-point rating scale. It was a single-item, adapted from a recent study,¹⁵ asking about the extent to which the respondent is following recommendations provided by the authorities concerning corona prevention plan. Response options ranged from 1(very rarely) to 5(all the time).

Data was analysed using SPSS 26. Frequencies, percentages and one-way analysis of variance (ANOVA) were computed. $P<0.05$ was considered statistically significant.

Results

Of the 300 subjects, 154 were males and 146 were

Table-1: Participants having belief in coronavirus disease-2019 (COVID-19) vaccine conspiracies (N=300).

Items	Strongly Agree		Agree		Not sure		Disagree		Strongly Disagree	
	f	%	f	%	f	%	f	%	f	%
1	25	8.1	101	32.8	110	35.7	64	20.8	7	2.3
2	26	8.4	94	30.5	109	35.4	59	19.2	20	6.5
3	53	17.2	91	29.5	98	31.8	56	18.2	10	3.2
4	41	13.3	105	34.1	85	27.6	67	21.8	10	3.2
5	31	10.1	86	27.9	108	35.1	71	23.1	12	3.9
6	32	10.4	74	24.0	97	31.5	86	27.9	19	6.2
7	15	4.9	91	29.5	90	29.2	84	27.3	28	9.1

Table-2: Conspiracy mentality and belief in coronavirus disease-2019 (COVID-19) vaccine conspiracies across varying level of willingness for vaccination among undergraduates (N=300).

Willingness for vaccination	n	%	Conspiracy mentality		F	p	Belief in COVID-19 vaccine conspiracies		F	p
			M	Sd			M	Sd		
Very Unlikely	75	25.0	46.78	6.67	3.72	.006	21.12	4.16	4.03	.004
Unlikely	128	42.6	46.13	7.82			21.91	3.82		
Not Sure	32	10.6	44.27	8.41			20.76	4.18		
Likely	53	17.6	42.81	8.79			19.69	3.71		
Very Likely	20	6.6	41.52	7.33			19.52	3.23		

Table-3: Degree of adherence to non-pharmaceutical interventions (NPIs) and associated conspiracy mentality and belief in coronavirus disease-2019 (COVID-19) vaccine conspiracies among undergraduates (N=300).

Degree of adherence to COVID-19 NPIs	n	%	Conspiracy mentality		F	p	Belief in COVID-19 vaccine conspiracies		F	p
			M	Sd			M	Sd		
Very rarely	83	26.9	47.31	7.91	2.97	.020	22.79	4.8	3.68	.006
A little amount of time	94	30.5	46.90	8.39			23.21	4.5		
A fair amount of time	97	31.5	43.65	9.41			21.53	3.96		
A lot of time	25	8.1	44.16	8.53			20.80	2.84		
All the time	9	2.9	42.78	9.98			19.78	2.91		

females. The overall mean age of the sample was 23.47(Sd=2.17) (range=19-25 years). A sample of 121(40.33%) respondents believed in vaccine conspiracies, while only 83(27.66%) showed disagreement (Table-1). High scorers on conspiracy mentality ($p<0.006$) and belief in vaccine conspiracies ($p<0.004$) had less willingness for vaccination (Table-2). High scores on conspiracy mentality ($p<0.20$) and belief in vaccine conspiracies ($p<0.006$) were associated with little adherence to behavioural recommendations for COVID-19 (Table-3). There was no significant difference in the conspiracy mentality and belief in vaccine conspiracies with reference to gender ($p>0.05$).

Discussion

In 2019, the WHO¹⁶ identified vaccine hesitancy as one of the top 10 threats to global health. This became an even greater health challenge later as COVID-19 was named a global pandemic and achieving high public vaccination rate was necessary to estimate the degree of virus mutation and general immunity against it, ultimately dictating the duration of the pandemic. A range of NPIs implemented by governments globally was received with varying degrees of compliance and acceptance by the public. For regions to achieve herd immunity, mass vaccination is a pre-requisite and following NPIs is vital in limiting the spread of virus and managing mutation.¹⁷ However, recent research revealed that multiple social and psychological factors inhibited adherence to governments' approved methods of prevention in terms of both behaviours and vaccination, and the uncertainty led considerable sections of public to conspiracy

theorising, highlighting a larger concern of conspiracy mentality around the world.

The present study revealed that Pakistani educated young adults held significant belief in COVID-19 conspiracy theories and overall conspiracy mentality, which has negatively impacted both their adherence to NPIs and willingness to receive vaccination against the virus. The findings fit the global picture emerging on the negative health outcomes of the conspiracy mindset.¹⁸⁻²⁰ A systematic review on COVID-19 vaccination intention also revealed variation across studies, identifying unwillingness to vaccination as a significant hindering factor in achieving herd immunity.²¹

Such findings lead to recommendations for government-regulated institutions, such as universities, to further their efforts in educating the masses on the scientific updates on the virus and vaccination transparently in order to reduce uncertainty about the virus, and the mistrust on governments.^{9-11,18,22} Since many psychosocial factors have influenced the prevalence of conspiracy mentality during COVID-19, social identity approach can be utilised to engage people's sense of community identity in building pro-social normative behaviours (duty towards the health safety of other members, following NPIs, vaccination etc.), as it is seen to predict increase in willingness to vaccination as well. This can be especially useful to exercise within educational institutions where there is already a sense of community and belongingness present.²³ Moreover, severe anxiety among students during COVID-19 lockdowns²⁴ and a general worry about

health²⁵ may serve as psychological determinants of vaccine acceptance.

There are few limitations of the current study. Online data collection may have influenced the generalisability of the results. This is because it may have led to sampling bias due to self-selection. Moreover, the sample size was not calculated using any software.

Conclusion

Willingness for vaccination and compliance with behavioural recommendations were underpinned by conspiracy mentality and belief in COVID-19 vaccine conspiracies.

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