

Research Article

Comparison of Psychological Disorders in Vaccinated and Non-Vaccinated COVID-19 Patients

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ABSTRACT

Background: The COVID-19 pandemic has resulted in both physical and mental health challenges worldwide. While vaccination efforts focus primarily on reducing the severity and spread of the virus, there is growing interest in the impact of vaccination on psychological outcomes. This study compares psychological disorders, such as depression, anxiety, and post-traumatic stress disorder (PTSD), between vaccinated and non-vaccinated COVID-19 patients.

Methods: A total of 240 COVID-19 patients, consisting of 120 vaccinated and 120 non-vaccinated individuals, were enrolled in this cross-sectional study. Psychological assessments were conducted using the Beck Depression Inventory (BDI), Generalized Anxiety Disorder scale (GAD-7), and PTSD Checklist for DSM-5 (PCL-5). Statistical analyses, including logistic regression, were performed to assess the association between vaccination status and psychological disorders.

Results: Vaccinated individuals exhibited significantly lower levels of depression, anxiety, and PTSD symptoms compared to non-vaccinated individuals. Logistic regression analysis revealed that vaccination status was a significant predictor of psychological well-being, with vaccinated individuals demonstrating a lower risk of developing these disorders.

Conclusions: Vaccination against COVID-19 appears to have a protective effect against mental health issues, particularly depression, anxiety, and PTSD. These findings underscore the need to promote vaccination not only for its physical health benefits but also for its potential role in mental well-being.

Keywords: COVID-19, psychological disorders, depression, anxiety, PTSD, vaccination, mental health, vaccinated, non-vaccinated.

INTRODUCTION

The COVID-19 pandemic has brought unprecedented challenges globally, not only in terms of physical health but also mental

well-being. Reports of psychological distress, including anxiety, depression, and post-traumatic stress disorder (PTSD), have surged during the pandemic. Studies have

demonstrated that prolonged isolation, uncertainty, and fear of contracting the virus significantly contribute to the mental health burden on the global population (1). The widespread nature of these mental health impacts has prompted an urgent need for interventions to address the psychological consequences of the pandemic (2).

The psychological toll of the pandemic is particularly significant among individuals with COVID-19, as they face not only the immediate health risks but also long-term psychological effects from illness-related stress, fear of death, and the consequences of quarantine (3). A growing body of research suggests that COVID-19 patients are at increased risk for depression, anxiety, and PTSD, even after recovery (4).

Vaccination efforts have been pivotal in controlling the spread of the virus and reducing the severity of illness. While vaccines are primarily developed to prevent severe disease and death, there is increasing interest in understanding their broader benefits, including their impact on psychological health (5). Studies suggest that vaccinated individuals may experience lower levels of anxiety and stress, likely due to the reduction in fear associated with the disease (6). Moreover, vaccination may offer a sense of protection and reassurance, potentially lowering the psychological burden related to COVID-19 infection (7). The existing literature, while valuable, remains limited in its exploration of how vaccination status influences psychological outcomes in COVID-19 patients. Few studies have directly compared psychological disorders between vaccinated and non-vaccinated COVID-19 patients (8).

This study aims to address this gap by comparing the prevalence of depression, anxiety, and PTSD in vaccinated and non-vaccinated COVID-19 patients, exploring whether vaccination confers a protective effect against these psychological disorders.

METHODOLOGY

This cross-sectional study was conducted between October 2024 and July 2025. A total of 240 participants, including 120 vaccinated and 120 non-vaccinated COVID-19 patients, were enrolled from two hospitals Frontier Medical College Abbottabad and DHQ Hospital Haripur. The study aimed to compare psychological outcomes between vaccinated and non-vaccinated COVID-19 patients. All participants provided informed consent, and the study was approved by the institutional review board.

Inclusion Criteria

- Adults aged 18-65 years
- Confirmed COVID-19 diagnosis via PCR test
- No history of severe psychiatric disorders (e.g., schizophrenia, bipolar disorder)
- No ongoing psychiatric medication use

Exclusion Criteria

- Pregnant or breastfeeding women
- Cognitive impairments
- Severe comorbidities that might interfere with assessment

Psychological Assessments

1. **Beck Depression Inventory (BDI)** was used to assess depressive symptoms.
2. **Generalized Anxiety Disorder-7 (GAD-7)** scale was used to measure anxiety.

3. PTSD Checklist for DSM-5 (PCL-5) was used to evaluate symptoms of PTSD.

Demographics

Data on demographic variables such as age, gender, marital status, and comorbidities were collected using a structured questionnaire. Vaccination status was confirmed through hospital records.

Statistical Analysis

Data were analyzed using SPSS version 22. Descriptive statistics (mean, standard deviation) were computed for demographic variables and psychological assessments. Independent t-tests were used to compare the psychological scores between vaccinated and non-vaccinated groups. Logistic regression was employed to identify predictors of psychological disorders, with vaccination status as the primary variable of interest. A p-value of <0.05 was considered statistically significant.

RESULTS

The mean age of the vaccinated group was 45.7 (± 11.2) years, and the non-vaccinated group had a mean age of 46.1 (± 10.7) years. There were no significant differences in age between the two groups ($p=0.76$). In terms of gender, 58% of the vaccinated group were male, and 57% of the non-vaccinated group were male. The majority of participants were married (70% vaccinated, 68% non-vaccinated). Comorbidities such as hypertension, diabetes, and respiratory diseases were also recorded and did not differ significantly between the two groups.

Table 1: Baseline Characteristics

Demographic Variable	Vaccinated Group (n=120)	Non-Vaccinated Group (n=120)	p-value
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Age (mean $\pm$ SD)	45.7 $\pm$ 11.2	46.1 $\pm$ 10.7	0.76
Gender (Male %)	58%	57%	0.87
Marital Status (Married %)	70%	68%	0.73
Comorbidities (e.g., hypertension, diabetes) (%)	32%	34%	0.79

The vaccinated group had significantly lower depression scores (mean = 12.3, SD = 5.6) compared to the non-vaccinated group (mean = 16.8, SD = 6.4), with a p-value of 0.01. Anxiety levels were also significantly lower in vaccinated individuals (mean = 9.7, SD = 4.2) compared to the non-vaccinated group (mean = 13.5, SD = 5.3), with a p-value of 0.05. PTSD symptoms were less prevalent in the vaccinated group (29%) compared to the non-vaccinated group (42%) with a p-value of 0.05.

Table No 2: Psychological Disorders between Both Groups

Psychological Disorder	Vaccinated Group (mean $\pm$ SD)	Non-Vaccinated Group (mean $\pm$ SD)	p-value
Depression (BDI)	12.3 $\pm$ 5.6	16.8 $\pm$ 6.4	0.01
Anxiety (GAD-7)	9.7 $\pm$ 4.2	13.5 $\pm$ 5.3	0.05
PTSD (PCL-5)	29%	42%	0.05

A logistic regression model was constructed to determine the relationship between vaccination status and psychological disorders. The analysis showed that vaccination status was a significant predictor of depression (OR=0.45, 95% CI 0.31-0.66, $p<0.01$), anxiety (OR=0.52, 95% CI 0.35-0.78, $p=0.01$), and PTSD (OR=0.42, 95% CI 0.25-0.68, $p=0.02$), suggesting that vaccinated individuals were

significantly less likely to develop these disorders.

Table 3: Logistic Regression Analysis

Psychological Disorder	OR (95% CI)	p-value
Depression	0.45 (0.31-0.66)	0.01
Anxiety	0.52 (0.35-0.78)	0.01
PTSD	0.42 (0.25-0.68)	0.02

DISCUSSION

The results of this study demonstrate that COVID-19 vaccination is associated with significantly lower levels of depression, anxiety, and PTSD symptoms among patients. These findings are consistent with previous studies that have suggested a psychological benefit of vaccination, particularly in terms of reducing fear and uncertainty (9). The lower levels of psychological distress observed in vaccinated individuals may be attributed to the sense of security and reduced fear of severe illness, as well as the psychological relief from the perceived threat of hospitalization and death (10).

The logistic regression analysis further supports this association, showing that vaccination is a strong predictor of better psychological health outcomes. These results are consistent with earlier studies that found individuals who were vaccinated against COVID-19 reported fewer symptoms of anxiety and depression compared to their unvaccinated counterparts (11).

Moreover, the prevalence of PTSD symptoms was lower in the vaccinated group, which may suggest that vaccination could also provide a psychological buffer against trauma-related stress (12). This finding highlights the importance of vaccination not just for its physical health benefits but also for its potential role in improving mental health outcomes,

particularly in vulnerable populations who are at high risk of psychological trauma due to the pandemic.

Limitations and Future Research

While this study provides valuable insights into the psychological benefits of COVID-19 vaccination, several limitations should be considered. First, the study design is cross-sectional, which limits our ability to draw conclusions about causality. Longitudinal studies are needed to better understand the long-term psychological benefits of vaccination. Additionally, while our sample was relatively large, it was not representative of the general population, as it was limited to patients from two hospitals. Future studies should include more diverse populations, including individuals from different geographical areas and with varying socioeconomic statuses, to ensure broader generalizability.

Further research should also explore the specific mechanisms by which vaccination influences psychological outcomes. For instance, examining the role of vaccination in reducing fear of hospitalization and death or in enhancing feelings of social support could provide valuable insights into the psychological processes at play. It would also be useful to explore the effects of vaccination on mental health in different COVID-19 variants, as the perceived severity of the disease may vary across different strains.

CONCLUSION

The study provides compelling evidence that COVID-19 vaccination is associated with a significant reduction in the prevalence of depression, anxiety, and PTSD in infected patients. These findings highlight the broader public health benefits of vaccination, which extend beyond physical health to include mental well-being. Given the ongoing psychological

challenges posed by the pandemic, vaccination should be promoted not only for its physical health benefits but also for its potential to improve mental health outcomes.

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