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A Comparative Study to the Persistence Post COVID Syndrome and the Infection Period between Vaccinated and Non-vaccinated Patients in Al Basrah Province

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Abstract

Introduction: The base stones in COVID-19 management were symptoms resolution and the mortality avoidance Consequently, there were a focus on the early recognition and the appropriate treatment however the assumption of that COVID-19 patients suffer ends with the end of infection were not completely write. Persistent post-COVID syndrome (PCS) also called long COVID is a pathologic state, which involves the persistent of a physical and medical abnormal conditions after three weeks of COVID-19 infection diagnosis.

Objective: A study was conducted to compare the persistence of COVID syndrome and the infection period between vaccinated and non-vaccinated patients.

Methodology: Data of a total of 756 volunteers were analyzed. and divided in to two main groups of Covid-19 infected people:1- vaccinated and 2-non-vaccinated patients each group were subdivided in to two other subgroups: a-patients with infection period less than 14 days and b-patients with infection period more than 14 days, performing the research in Al-Basra province. A 12 questions form was established and filled by making direct interviews with the volunteers.

Results: 28% of individuals reported unvaccinated and 71.95% report vaccinated. vaccinated participants in the study (71.95%±12.56 SD) have an infection period of (1-14) days (78.62%±10.58 SD), whereas (21.25%±4.76 SD) have an infection period of more than 14 days. There were differences in the symptom spectrum between the groups. Long-term persistent symptoms such as cough, hair loss, impotence, loss of taste and/or smell, poor memory, and dyspnea were significantly associated with vaccinated participants when compared to the unvaccinated participants, who had the same duration of illness (1-14) days.

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Conclusion: People have to be more aware about COVID-19 and should get vaccinated, another topic is how longer residual PCS last and whether they have a long-term impact on quality of life.

Keywords: Post COVID syndrome, COVID-19, Symptoms, Vaccine.

Introduction

Since December 2019, coronavirus pandemic has cross the many parts of world creating millions of infected people and hundreds of thousands of dead[1,2], the base stones in COVID-19 management were symptoms resolution and the mortality avoidance Consequently, there were a focus on the early recognition and the appropriate treatment however the assumption of that COVID-19 patients suffer ends with the end of infection were not completely write[3].

Sever acute respiratory syndrome- corona virus 2 (SARS-CoV-2) which affect both lower and upper respiratory tract producing symptoms starting from sore throat, common cold, fatigue, fever, dry cough, nasal congestion, and sometimes diarrhea reaching to severe pneumonia, difficulty in breathing and ends with death[4] beside the disrupted flavor and taste sensation earlier before respiratory involvement[5], some of these symptoms persist even after recovery.

Persistent post-COVID syndrome (PCS) also called long COVID[6] is a pathologic state, which involves the persistent of a physical and medical abnormal conditions after three weeks of COVID-19 infection diagnosis. This pathological state ranges from cough, breathlessness, poor memory, impotence, hair loss and loss of smell or taste reaching to pulmonary and cardiac fibrosis[7].

The PCS cause of happening is multifactorial and more than one mechanism may be involved, mainly the immune response after trauma or sever infection which is a systemic inflammatory response a long-lasting counterbalance anti-inflammatory response will occur[8]. And despite the vaccine development with different production strategies[9,10] and with different protection margin[11, 12], still there was a small percentage of people who received the food and drug administration (FDA) recommended vaccine doses still acquiring symptomatic or asymptomatic SARS-CoV-2 infection[13,14], this called a vaccine breakthrough infection which defined as the detection of SARS-CoV-2 RNA or antigen in a respiratory specimen collected from fully vaccinated person after 14 days or more from the last dose of COVID-19 vaccine[15]. This lead to the question of does the infected vaccinated people also suffer the PCS and dose vaccination strengthen the humans` immunity so they could compete the disease in shorter duration.in this study These questions will be investigated and discussed.

Materials and Method

Data of a total of 756 volunteers were analyzed. and divided in to two main groups of Covid-19 infected people: 1- vaccinated and 2-non-vaccinated patients each group were subdivided in to two other subgroups: a-patients with infection period less than 14 days and b-patients with infection period more than 14 days, performing the research in Al-Basra province. A 12 questions form was established and filled by making direct interviews with the volunteers, this form was covered by a massage explain the research purpose and background. Volunteers were asked if they have PCS like cough, breathlessness, poor memory, impotence, hair loss and loss of smell or taste. The answers considered to be a yes or no questions represented in a binary feature either 1 for having the specific PCS or 0 for not. Other information was asked from each volunteer including age, sex, province, chronic diseases, type of vaccine and the method of COVID -19 infection diagnosis. The Inclusion criteria included age above 18, with no risk factors or chronic diseases and belonging to Al-Basrah city, any volunteer below the age 18, with risk factors or chronic diseases and/or doesn't settled in Al-Basrah were not included, the interviews started from 4th of October to 25th of November, 2021. after data collection were finished, data analysis by using t- test were done to calculate significance. A comparative measure between the four subdivisions were made to determine the percentage of the persistence of PCS and the duration of infection.

The Symptom form's composition

To avoid terminology misunderstanding, the duration of the condition was measured from the

time it was first diagnosed with COVID-19, with the premise that at least two months should elapse following healing.

The following systems were used to categorize patients' symptoms: general (tiredness, fever, and rhinorrhea), respiratory (abdominal pain, breathlessness, and cough), cardiovascular (increased blood pressure, ischemia, and MI), diabetic, dermatology (hair loss and rashes), and GIT (gastrointestinal infection) (abdominal pain, loss of smell and taste, vomiting and diarrhea). A special form was used to assess each symptom[16].

Statistical analysis

When appropriate, percentages, frequencies, and mean SD were utilized. A p value of less than 0.05 was considered statistically significant. Version 19.0 of Predictive Analytics Software was used. In parametric situations, the t-test was employed to compare continuous variables for distributed data and categorical variables. Multivariate logistic regression was used to identify independent factors of symptoms[17].

Pre-Processing

The main steps in pre-processing are to remove all of the samples that had missing data in all categories. There are no missing values for the symptoms features since, as binary features, they refer to "1" when a participant indicates they have a symptom and "0" otherwise. Following pre-processing, a sample of 756 participants (494 with symptoms after recovering and 262 with no symptoms after recovering) who meet the criteria is obtained. With this number of samples, it is possible to assume a confidence level of 100% when evaluating the region mentioned above[(18)].

Results

According to the findings of this study, 756 people who had recovered from COVID-19 were asked whether they wanted to participate in the study, and they all accepted. We received 756 forma replies in 168 hours, from 4th of October to 25th of November 2021. The overall mean age of the participants was 34.5 years (SD ±2.91). The total sample for the validation study was 756 people that filled out the form (317 recorded men and 439 recorded females). 28% of individuals reporting unvaccinated and 71.95% reporting vaccinated. Figures 1 and 2 show the sociodemographic features of the study population.

For those who have recorded, all of whom are healthy individuals (not have risk factor or any chronic disease). The most prevalent answers for the diagnosis of COVID 19 infection by Pcr, Ct scan, and others are (64.3%), (16.6%), and (19.1%), respectively. More than half of those who have participated have received the Pfizer vaccine (70.77%) and about (17.64%) have received the Sino pharm vaccine while the remainder takes AstraZeneca (11.58%).

Furthermore, our findings clearly demonstrated that non-vaccinated people in study (28% ±7.43 SD), (68.09% ±3.37 SD) of them had an infection period 1-14 days, whereas (31.51%± 2.74 SD) of them had an infection period more than 14 days.

Vaccinated participants in the study (71.95%±12.56 SD) have an infection period of (1-14) days (78.62%±10.58 SD), whereas (21.25%±4.76 SD) have an infection period of more than 14 days.

Table 1, 2 shows the characteristics of participants who answer the form about symptoms that persist after infection recovery.

There was a non-significant difference ($p<0.05$) in the ages of the participants in the study, with 34.5% having an age of (18-25), 35.45% having an age of (26-35), and 30% having an age of (> 35), p=0.052.

Health Status:

In this study, roughly (48.15 %) of the participants who were recorded as vaccinated had no apparent symptoms, while about (30.47 %) exhibited obvious symptoms.

Discussion

The study's findings will help raise public awareness about the COVID-19 epidemic's implications. The current study used a form to collect the majority of its data., found a clear difference in PCS between vaccinated and unvaccinated people. During the interview asks participants a variety of questions, the most essential of which are PCS, whether they were vaccinated or not, as well as the types of vaccines they received and the number of

days they were infected[19].

Regarding to the study (Table 1, 2), the strongest indications of PCS infection were cough, loss of smell and taste, hair loss, loss of concentration, impotence, and shortness of breath.

Table 1: Characteristic of non-vaccinated participants about symptoms that appears after recovery (n=212).

Symptom that appears after recovery	Infection duration ranges from 1 to 14 days. No.	Percentage %	Infection duration more than 14 days No.	Percentage %
Cough	28	13.2	12	5.66
Breathlessness	19	8.96	8	3.77
Poor memory	32	15	11	5.18
Impotence	13	6.13	2	0.94
Hair loss	23	10.8	15	7
loss of smell or taste	30	14	19	8.96
Total	145	68.0%	67	31.51 %

Table 2: Characteristic of vaccinated participants about symptoms that appears after recovery (n=544).

Symptom that appears after recovery	Infection duration ranges from 1 to 14 days. No.	Percntage %	Infection duration more than 14 days No.	Percentage %
Cough	50	9.19	10	1.8
Breathlessness	20	3.67	4	0.73
Poor memory	39	7.16	8	1.47
Impotence	20	3.67	3	0.55
Hair loss	58	10.66	11	2
loss of smell or taste	54	9.9	5	0.919
There are no visible signs.	187	34.37	75	13.78
Total	428	78.62 %	116	21.249 %

According to our findings, 262 people in the vaccinated group (n=544) exhibit no PCS

In this study, when comparing the data between healthy groups (vaccinated and unvaccinated), there was a significant difference ($p<0.05$) between vaccinated people and unvaccinated people in the duration of illness (1-14) days through the symptoms following recovery from infection, $p=0.017$.

There was an insignificant difference ($p<0.05$) between (vaccinated people and unvaccinated people) in the duration of illness lasting more than 14 days through the symptoms following infection recovery $p=0.085$, Figure 1,2 represents the value difference in the PCS.

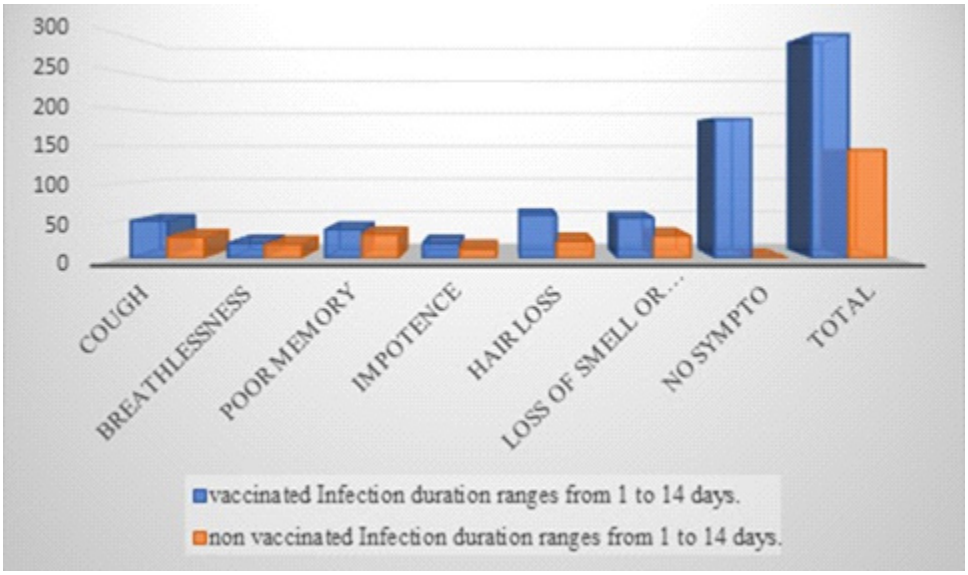

Figure 1: Demonstrate the value change in PCS after (1-14) days of infection.

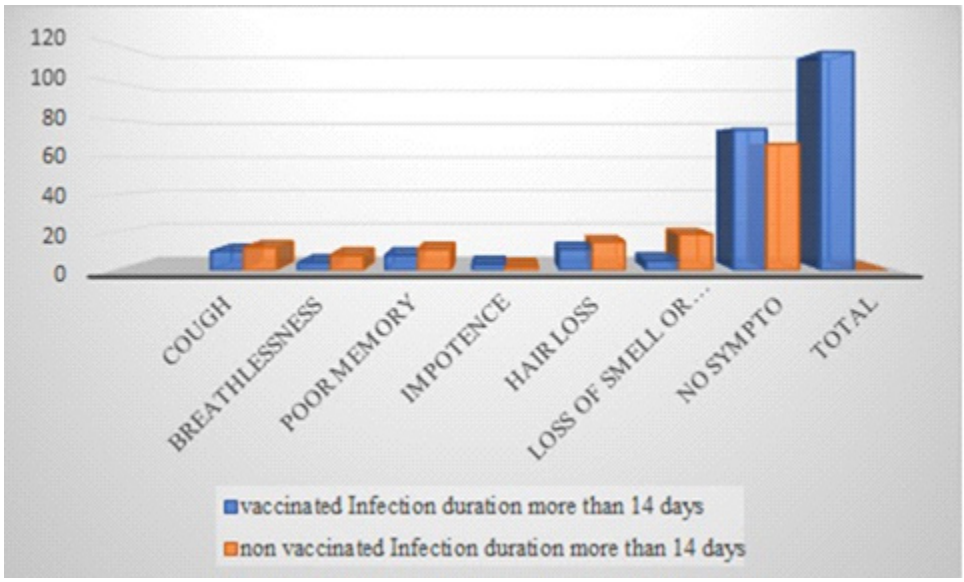

Figure 2: Demonstrate the value change in PCS after more than 14 days of infection

Negative PCR is not the end of patient monitoring for individuals recovered from COVID-19; continued and long-term monitoring of the patients is required for evaluation of post-COVID-19 manifestations and early intervention with the important indicators. Furthermore, continuing counseling with the subjects is critical not only for keeping strong adherence to the drugs, but also for detecting early warning indications of developing significant symptoms. Medication adherence has a positive impact on patient outcomes[20].

There are a number of benefits to our research. First, the study had the largest number of participants, with 756 people in Al-Basrah. Second, this study examines PCS using a one-to-one question. Third, depending on the vaccination and the length of illness, the study included a sufficient number of people from each category. Fourth, in our study, we enrolled a comparison group, which allowed us to compare a persistent symptom between persistence post-COVID vaccinated and other non-vaccinated, and to demonstrate that long-term symptoms were more persistent in unvaccinated COVID-19 people.

Limitations

Our study had several limitations, the most significant of which being the survey's timing, which runs from 4th of October to 25th of November, 2021. The basis of this investigation is the participants' self. There could be differences in how patients evaluate, express, and treat their symptoms.

Conclusion

People have to be more aware about COVID-19 and should get vaccinated, according to our findings. This research also concludes that 34.65% of vaccinated people had no PCS, but that the symptoms of the same group of vaccinated people are milder than the symptoms of unvaccinated people. There is misgiving that people's awareness about immunizations is lacking. As a result, in order to activate their immune systems and protect themselves against the pandemic, individuals must be fully vaccinated[19].

To summary, there are various unknowns that need to be investigated. Some of these unknowns involve this investigation, such as whether there are persistent symptoms, that is, if they are a warning sign of the body, indicating that damage is still occurring, or if they are a result of the weakening of the systems caused by the COVID 19 infection. Another topic is how longer residual PCS last and whether they have a long-term impact on quality of life. For this, it is necessary to understand the short, medium, and long-term scope of potential physical and psychological consequences following COVID, including in these questions, if the times set for social isolation are adequate[21,22].

Without a doubt, one must continue to query in order to get knowledge that adds to understanding how this disease grows, the consequences it might cause, and the best method to deal with it while experiencing the fewest side effects.

Ethics:

The Ethics Committee of the University of Basra/ Medical College approved this study design. The initiative received enthusiastic approval from the committee.

Conflict of interest: The authors declared no conflict of interest in the manuscript.

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Reference

1. Dong, E., H. Du, and L. Gardner, An interactive web-based dashboard to track COVID-19 in real time. The Lancet infectious diseases, 2020. 20(5): p. 533-534. DOI:10.1016/S1473-3099(20)30120-1
2. Miller, M., 2019 Novel Coronavirus COVID-19 (2019-nCoV) Data Repository: Johns Hopkins University Center for Systems Science and Engineering. Bulletin-Association of Canadian Map Libraries and Archives (ACMLA), 2020(164): p. 47-51. DOI:10.15353/acmla.n164.1730
3. Toresdahl, B.G. and I.M. Asif, Coronavirus disease 2019 (COVID- 19): considerations for the competitive athlete. 2020, SAGE Publications Sage CA: Los Angeles, CA. p. 221-224. DOI: 10.1177/1941738120918876
4. Paules, C.I., H.D. Marston, and A.S. Fauci, Coronavirus infections—more than just the common cold. Jama, 2020. 323(8): p. 707-708. DOI: 10.1001/jama.2020.0757.
5. Melley, L.E., E. Bress, and E. Polan, Hypogeusia as the initial presenting symptom of COVID-19. BMJ Case Reports CP, 2020. 13(5): p. e236080. DOI: 10.1136/bcr-2020-236080.
6. Sudre, C.H., et. al., Attributes and predictors of Long-COVID: analysis of COVID cases and their symptoms collected by the Covid Symptoms Study App. Medrxiv, 2020. DOI: 10.1136/bcr-2020-236080
7. Garrigues, E., et. al., Post-discharge persistent symptoms and health-related quality of life after hospitalization for COVID-19. Journal of Infection, 2020. 81(6): p. e4-e6. DOI: 10.1016/j.jinf.2020.08.029.
8. Hotchkiss, R.S., G. Monneret, and D. Payen, Sepsis-induced immunosuppression: from cellular dysfunctions to immunotherapy. Nature Reviews Immunology, 2013. 13(12): p. 862-874. DOI: 10.1038/nri3552
9. Pandey, S.C., et. al., Vaccination strategies to combat novel corona virus SARS-CoV-2. Life sciences, 2020. 256: p. 117956. DOI: 10.1016/j.lfs.2020.117956
10. Al-Kassmy, J., J. Pedersen, and G. Kobinger, Vaccine candidates against coronavirus infections. Where does COVID-19 stand? Viruses, 2020. 12(8): p. 861. DOI: 10.3390/v12080861
11. Lurie, N., et. al., Developing Covid-19 vaccines at pandemic speed. New England Journal of Medicine, 2020. 382(21): p. 1969-1973. DOI: 10.1056/NEJMp2005630

12. Mahase, E., Covid-19: Pfizer and BioNTech submit vaccine for US authorisation. 2020, British Medical Journal Publishing Group. DOI: 10.1136/bmj.m4552.
13. Swift, M.D., et. al., Effectiveness of mRNA COVID-19 vaccines against SARS-CoV-2 infection in a cohort of healthcare personnel. Clinical Infectious Diseases: An Official Publication of the Infectious Diseases Society of America, 2021. DOI: 10.1093/cid/ciab361
14. Haas, E.J., et. al., Impact and effectiveness of mRNA BNT162b2 vaccine against SARS-CoV-2 infections and COVID-19 cases, hospitalisations, and deaths following a nationwide vaccination campaign in Israel: an observational study using national surveillance data. The Lancet, 2021. 397(10287): p. 1819-1829. DOI: 10.1016/S0140-6736(21)00947-8
15. Paden, C.R., et. al., Rapid, sensitive, full-genome sequencing of severe acute respiratory syndrome coronavirus 2. Emerging infectious diseases, 2020. 26(10): p. 2401. DOI: 10.3201/eid2610.201800
16. Pamunuwa, G., V. Karunaratne, and D. Karunaratne, Effect of lipid composition on in vitro release and skin deposition of curcumin encapsulated liposomes. Journal of Nanomaterials, 2016. 2016. DOI:10.1155/2016/4535790
17. Abdulameer, S.A., Knowledge and pharmaceutical care practice regarding inhaled therapy among registered and unregistered pharmacists: an urgent need for a patient-oriented health care educational program in Iraq. International journal of chronic obstructive pulmonary disease, 2018. 13: p. 879. DOI: 10.2147/COPD.S157403
18. Galván-Tejada, C.E., et. al., Persistence of COVID-19 symptoms after recovery in Mexican population. International journal of environmental research and public health, 2020. 17(24): p. 9367. DOI: 10.3390/ijerph17249367.
19. Rossman, H., et. al., A framework for identifying regional outbreak and spread of COVID-19 from one-minute population-wide surveys. Nature Medicine, 2020. 26(5): p. 634-638. DOI: 10.1038/s41591-020-0857-9.
20. Saeed, H., et. al., Impact of advanced patient counseling using a training device and smartphone application on asthma control. Respiratory care, 2020. 65(3): p. 326-332. DOI: 10.4187/respcare.06903
21. Makaronidis, J., et. al., Seroprevalence of SARS-CoV-2 antibodies in people with an acute loss in their sense of smell and/or taste in a community-based population in London, UK: An observational cohort study. PLoS medicine, 2020. 17(10): p. e1003358. DOI: 10.1371/journal.pmed.1003358
22. Wang, J., et. al., Persistent SARS-COV-2 RNA positivity in a patient for 92 days after disease onset: a case report. Medicine, 2020. 99(34). DOI: 10.1097/MD.0000000000021865