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Original Article

ASSESSMENT OF QUALITY OF LIFE AND EFFECTS IN RECOVERED AND VACCINATED COVID-19 POPULATION: A CROSS-SECTIONAL OBSERVATIONAL STUDY

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ABSTRACT

Objective: The main objective of this study was to assess the QOL (quality of life) and effects on the recovered and vaccinated COVID-19study population.

Methods: A cross-sectional observational study was carried out for six months among residential areas and selected individuals regardless of country. Demographic details and responses were collected through phone calls and also using google form questionnaires.

Results: A total of 264 subjects were enrolled in this study. In the selected study of recovered patients, it was found that females (mean score 21.9) experience high effects compared to males (mean score 39.6) since a low mean score means higher post-effects. In the evaluation of post-vaccination effects of the selected study population, it was found that males and females experience different levels of post-vaccination effects in which females(mean score 19.5) experience high effects comparatively to males (mean score 21.9). The result of the quality of life for both recovered patients and the vaccinated population infers that the younger age group was found to experience a high quality of life than the older age group who were>65 y of age.

Conclusion: The study concludes that the elderly population of>65 y of age and females based on gender were likely to suffer from post-COVID-19 effects and post-vaccination effects. It can also be concluded that the younger age group has a healthy standard of living compared to the age group>65 y.

Keywords: COVID-19 (Coronavirus disease 2019), Disease, Vaccine, Effects

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INTRODUCTION

COVID-19(Coronavirus disease 2019) is an infectious disease caused by SARS-CoV-2 (severe acute respiratory syndrome coronavirus 2), which is a newly discovered coronavirus. The global pandemic caused by COVID-19 is ongoing, with a projected death toll of almost 3.5 million by 1st May 2021 [1].

The virus is typically rapidly spread from one person to another via respiratory droplets produced during coughing and sneezing. It is considered most contagious when people are symptomatic, although transmission may be possible before symptoms show in patients [2]. Time from exposure and symptom onset is generally between two and 14 d, with an average of five days. The first signs of the disease usually appear as dry cough and fever [3]. Common symptoms include fever, cough, sneezing, and shortness of breath. Other symptoms also include loss of taste or smell, nasal congestion, conjunctivitis(also known as red eye), sore throat, headache, muscle or joint pain, different types of skin rash, chills, or dizziness. Symptoms of severe COVID-19 disease include shortness of breath, confusion, persistent pain or pressure in the chest, and high temperature (above 38 degrees Celsius) [4].

The definitive diagnosis of COVID-19 is made by analyzing respiratory samples (collected by aspiration of the airways or sputum induction) [5]. The collection of nasopharyngeal aspirate, combined (nasal and oral) swab samples or samples of lower respiratory tract secretions (sputum, tracheal lavage fluid, or Bronchoalveolar lavage fluid) is recommended [6]. Coronavirus presence is also seen in feces and urine samples of the patient, some researchers are working on this for confirmation [7]. To confirm the disease, it is necessary to perform molecular biology tests that detect viral RNA. Severe cases should be transferred to a referral hospital for isolation and treatment. Individuals with mild symptoms should be followed at the primary health care level and should be advised to self-isolate at home [8]. Since there was limited knowledge of this new disease, the social distancing, use of face masks, and hand hygiene etiquettes were practiced as a general rule of thumb and the lesson learned from previous pandemic [9]. The use of PPE has been promoted to be used by health workers to decrease the transmission of the virus [10].

India is regarded as the vaccine manufacturing hub of the world and contributes about 60% to the global vaccine supply. The country can manufacture well over 3 billion COVID-19 vaccine doses annually [11]. Following the roll-out of COVID-19 vaccines across the globe, several countries have initiated large-scale vaccination programs to control the ongoing pandemic [12].

Long-term monitoring of adverse drug reactions and an urgent need for monitoring by pharmacovigilance is necessary for each country. It looks like such mild side effects are acceptable during COVID-19 vaccinations as the body will need some time to adopt the vaccination dose and to trigger the immune system to induce protective antibodies [13]. The short-term side effects of vaccines vary in their clinical presentation; however, they are commonly related to prophylactic vaccines' humoral immune response. Hence, further independent studies on vaccine safety are strongly required to strengthen public confidence in the vaccine [14].

It is imperative to understand the possible outcome of COVID-19 recovered patients and the vaccinated population to safeguard their life in the future. As it is an ongoing pandemic at the moment, innumerable research still needs to be done to have more distinct knowledge and information regarding this disease [15].

MATERIALS AND METHODS

This study was a cross-sectional observational study and was conducted in selected residential areas in Kerala and Mizoram and selected individuals regardless of the country who got recovered

from COVID-19 and got vaccinated with COVID-19 vaccines. This study was conducted for six months. The inclusion criteria include recovered COVID-19 patients and people who got vaccinated including both genders while people not infected with COVID-19 and those who are not vaccinated are excluded from this study. The study was approved by the Institutional Ethical Committee of SJM College of Pharmacy, Chitradurga with vide Ref: No. SJMCP/685/2021-22.

Statistical analysis

Evaluation of questionnaires was done using Google sheets. Quantitative data were expressed in frequency, percentage, p-value, degree of freedom, standard deviation, and confidence interval by using student t-test, one-way ANOVA, and Pearson's correlation in IBM SPSS version 28.9 software and Google sheets.

RESULTS

In the study of recovered COVID-19 patients, based on age, patients were mainly divided into 4 groups. This includes pediatric, young, young-old/middle age, and geriatric. Out of 122 patients, 13 were below 15 y, followed by 32 patients who were in 16-25 y, 30 patients were in 26-35 y, 16 patients were in 36-45 y, 13 patients were in 46-55 y, 10 patients were in 56-65 y and 8 patients were above 65 y of age group. The age group of 16-25 was found to have the highest number of recovered patients. The observations are shown in table 1.

Table 1: Distribution of patients according to age group

S. No.	Age group	Age group (Y)	Frequency (n=122)	Percent (%)
1	Pediatric	≤15y	13	10.7
2	Young	16-25	32	26.2
		26-35	30	24.6
		36-45	16	13.1
3	Young old/Middle age	46-55	13	10.7
		56-65	10	8.2
4	Geriatric	>65 y	08	6.6
Total			122	100

Among the 122 patients, 53 (43.5%) were females and 69 (56.5%) were males. In this study, female patients were more prone to COVID-19 than males. The results are shown in table 2.

Table 2: Distribution of patients according to gender

S. No.	Gender	Frequency	Percent
1	Males	53	43.5
2	Females	69	56.5
Total		122	100

Out of 122 patients in the study, 53 were males and 69 were females and by pairing the samples, it can be inferred that males and females experience different levels of post-COVID effects and can be summarised that females experience high effects comparatively to males (mean score 21.9) since low mean score means higher post-COVID effects as shown in table 3.

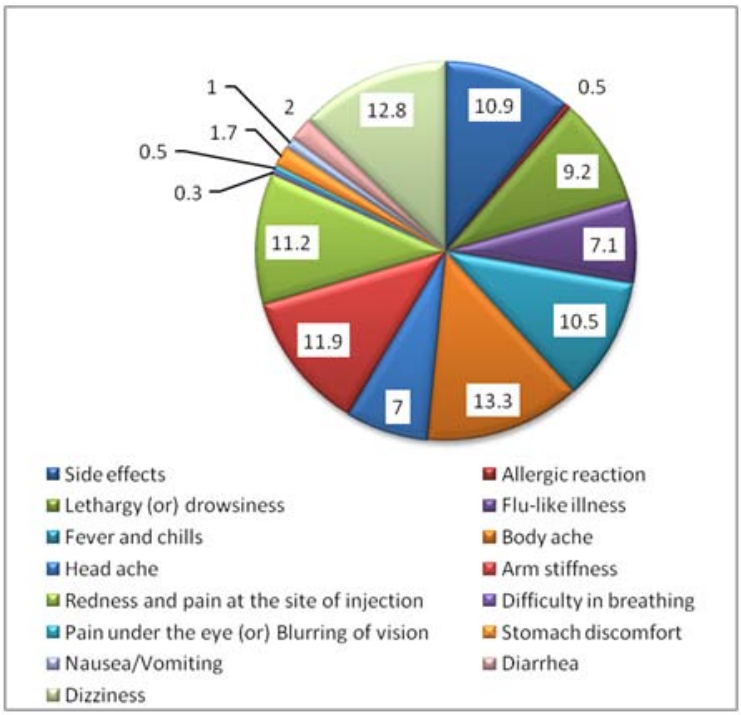

Fig. 1: Pie chart representation of the distribution of post-vaccination effects in the total vaccinated population

Table 3: Distribution of post-COVID effects in COVID-19 recovered patients

Gender	Mean	N	Std. deviation	Std. error mean
Males	39.6667	53	3.37773	.50352
Females	21.9333	69	4.46909	.66621

Responses provided by the subjects for post-COVID effects

The post-COVID effects observed in patients show that fatigue was mostly identified in more common symptoms. Sleeplessness, loss of appetite, sadness, fear, and laziness were mostly occurring in less common symptoms and among the serious symptoms, increased heartbeat had the highest percentage. The results are shown in table 4.

Table 4: Distribution of responses provided by subjects for post-COVID effects

Category	Symptoms experienced by the subject	Response received			
		YES		NO	
		Freq.	(%)	Freq.	(%)
More common symptoms	Fever	16	13.1	106	86.9
	Cough	58	47.5	64	52.5
	Cold	62	50.8	60	49.2
	Fatigue/tiredness	68	55.7	54	44.3
	Nausea/Vomiting	2	1.6	120	98.4
	Diarrhea	5	4.1	117	95.9
	Sore throat	17	13.9	105	86.1
Less common symptoms	Sleeplessness	34	27.9	88	72.1
	Dizziness	13	10.7	109	89.3
	Headache	29	23.8	93	76.2
	Pain under the eye	1	0.8	121	99.2
	Sinus Congestion	9	7.4	113	92.6
	Temporary vision loss	1	0.8	121	99.2
	Blurry vision	3	2.5	119	97.5
	Difficulty in concentrating	21	17.2	101	82.8
	Memory Loss	12	9.8	110	90.2
	Poor attention	15	12.3	107	87.7
	Slow thinking	22	18.0	100	82.0
	Poor executing of functions	21	17.2	101	82.8
	A small amount of urine output	1	0.8	121	99.2
	Confusion	11	9.0	111	91.0
	Joint Pain	15	12.3	107	87.7
	Back Pain	13	10.7	109	89.3
	Muscle Pain	16	13.1	106	86.9
	Joint Stiffness	3	2.5	119	97.5
	Dry Mouth	18	14.8	104	85.2
	Joint Swelling	1	0.8	121	99.2
`	Skin Lumps/Red Rashes	5	4.1	117	95.9
	Finger Swelling	00	00	122	100.0
	Pain in Abdomen	11	9.0	111	91.0
	Feeling thirsty	21	17.2	101	82.8
	Urine is dark yellow and smelly	6	4.9	116	95.1
	Feeling light-headed and dizzy	7	5.7	115	94.3
	Less urine flow	5	4.1	117	95.9
	Swelling in the face	3	2.5	119	97.5
	Swelling in the belly region, feet, or ankles	4	3.3	118	96.7
	Puffiness around the eye especially in the morning	1	0.8	121	99.2
	Sadness	56	45.9	66	54.1
	Fear	62	50.8	60	49.2
	Sluggishness	32	26.2	90	73.8
	Weight loss	32	26.2	90	73.8
	Blurred vision	3	2.5	119	97.5
	Laziness	38	31.1	84	68.9
	Less/no appetite	37	30.3	85	69.7
	Pus production from cuts or wounds	1	0.8	121	99.2
	NIL/low wound healing	7	5.7	115	94.3
	Necrosis of wounds	3	2.5	119	97.5
	Allergic reaction	6	4.9	116	95.1
Serious symptoms	Breathlessness	32	26.2	90	73.8
	chest pain	8	6.6	114	93.4
	Trouble waking up	17	13.9	105	86.1
	Increased heartbeat	34	27.9	88	72.1

In the study of 122 subjects, the COVID-19 recovered patient's QOL scores were assessed based on age group. The number of recovered patients in each age group is noted and the mean score is taken as the overall QOL score of each group. It can be

inferred that comparatively, the age group of 16-25 y experiences high QOL than other age groups while the age group of>65 y experiences low QOL. The results are represented in table 5.

Table 5: Distribution of QOL scores in the different age groups

One-sample statistics				
Age group	**N**	**Mean**	**Std. deviation**	**Std. error mean**
≤15yrs	13	70.3438	13.28984	2.34933
16-25	32	81.3077	12.57898	3.48878
26-35	30	62.7813	15.83531	2.79931
36-45	16	69.2667	15.86761	4.09700
46-55	13	72.1667	16.14048	4.65936
56-65	10	59.9000	18.46588	5.83943
>65 Y	8	38.8750	10.81583	3.82397

Post-vaccination effects in the vaccinated population

The COVID-19 vaccinated populations were identified and their demographic details, medical, clinical condition, and other relevant details such as comorbid conditions were collected through questionnaires. A total of 142 vaccinated subjects were enrolled in the study. The 142 vaccinated population is compared based on post-vaccinated effects in which body ache, dizziness, fever and redness, and pain at the site of injection are the most common side effects, while diarrhea, difficulty in breathing, and nausea/vomiting are among the least side effects. The results are shown below in fig. 1.

Out of 142 vaccinated population in the study, 96 were females and 46 were males and by pairing the samples, it can be inferred that males and females experience different levels of post-vaccination effects, the lesser the mean score higher the effects. The results are represented below in table 6.

Table 6: Distribution of post-vaccination effects in vaccinated population based on gender

Gender	Mean	N	Std. deviation	Std. error mean
Males	21.9541	46	2.4961	.24769
Females	19.5486	96	1.7590	.34120

Out of 142 vaccinated population, the effects of post-COVID vaccination is inferred based on age group and vaccination brand. In this table, we can see that Covishield has the highest post-vaccination effects in all age groups compared to other brands and ages. The results are shown in table 7.

Table 7: Distribution of post-vaccination effects based on age group and vaccination brand

Age group	Covaxin		Covishield		Pfizer		Sinoform	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
18-34	13	65.0	42	38.9	01	8.3	01	50.0
35-54	05	25.0	32	29.6	11	91.7	01	50.0
55-64	02	10.0	21	19.4	00	0.0	00	0.0
Above 65	00	0.0	13	12.0	00	0.0	00	0.0
Total	20	100	108	100	12	100	02	100

In the study of 142 vaccinated subjects, the COVID vaccinated subject QOL scores are assessed based on age group. The mean score is taken as the overall QOL score of each group. It can be inferred that comparatively, the age group of 35-54 y experiences high QOL than other age groups, while the age group of>65 y experiences low QOL. The result is shown in table 8.

Table 8: Age group and QOL scores comparison in overall COVID-19 vaccinated population

One-sample statistics				
Age group	**N**	**Mean**	**Std. deviation**	**Std. error mean**
18-34	57	73.2480	12.41206	3.98730
35-54	49	76.9541	10.14577	2.74212
55-64	23	72.1975	17.36474	4.96421
Above 65	13	57.3475	11.14790	2.24852

DISCUSSION

In our study, the majority of the sample collections were from several states of India, and the remaining were collected from different countries like UAE, Saudi Arabia, and the USA. A total of 264 samples were collected for the study using 4 questionnaires which of the following questionnaire is QOL analysis using a short-form survey of 36 questionnaires (SF36). A total of 519 responses were collected. 122 samples were collected from COVID-19 recovered patients. The same population was analyzed for quality of life (QOL) using the SF36 questionnaire. The rest of the samples were analyzed for effects of vaccination in the population which had a sample size of 142 in which 133 samples were analyzed for QOL in the vaccinated population. It has been revealed that older age group who are>65 y of age were more vulnerable to post-COVID-19 effects than those of younger age. The results are comparable to the study conducted by Vahia I *et al.,* who found that older adults experienced disproportionately greater adverse effects from the pandemic, including more severe complications and higher mortality [16]. Similarly, Jaarsveld V *et al.* showed that the elderly population has been hit with some of the worst effects of the pandemic, with an increased risk of mental and physical health problems [17].

In the precis of QOL in recovered COVID-19 patients, it was visible that the younger age group 16-25 y experience high QOL than other groups while the age group>65 y experience low QOL which is comparable to the study done by Hansen M *et al.,* in which the results suggest awareness of the long-term functional decline in older COVID-19 patients [18]. In the study of the effects of the COVID-19 vaccine on the population, females experience high post-vaccination effects compared to males. This study co-relates with the study conducted by McCartney P, which concludes that women exhibit a greater immune response that can facilitate vaccine efficacy, but they also experience more frequent and more severe adverse events [19]. As for the study of QOL in a vaccinated population, it was found that the age group>65 y experience low QOL while the age group 35-54 y experience high QOL.

The post-COVID effects observed in patients show that fatigue was mostly identified in more common symptoms that can be compared to the study done by Townsend L *et al.,* in which the study highlights a lengthy post-infection fatigue burden that will impair quality of life and will have a significant impact on individuals, employers and healthcare systems [20]. The post-vaccination effects mostly perceived among the population include body ache, dizziness, fever and redness, and pain at the site of injection. This study can be related to the research conducted by Menni C *et al.,* in which the research findings conclude that systemic and local side effects were reported by individuals after the first dose of BNT162b2 and after the first dose of ChAdOx1 nCoV-19 [21].

CONCLUSION

Gleaned from the study population, it was perceived that the elderly population of>65 y of age and females based on gender are likely to suffer from post-COVID-19 effects and post-vaccination effects. It was inferred that the 18-34 age group who got vaccinated with covishield shows more effects compared to other brands and ages. It can also be concluded that the younger age group has a healthy standard of living compared to the age group>65 y.

LIMITATION OF STUDY

The patients interviewed varied from children of 4 y of age to senior patients of 90 y, so the information collected from these patients may not be accurate because they may not be able to process what exactly is happening in their bodies. The samples collected for different brands of vaccine varied largely in the number of samples collected and some brands of vaccine samples were obtained in very few numbers.

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AUTHORS CONTRIBUTIONS

All the authors have contributed equally.

CONFLICT OF INTERESTS

Declared none

REFERENCES

1. Welte T, Ambrose LJ, Sibbring GC, Sheikh S, Müllerova H, Sabir I. Current evidence for COVID-19 therapies: a systematic literature review. Eur Respir Rev. 2021 Feb 10;30(159):200384. doi: 10.1183/16000617.0384-2020, PMID 33731328.
2. Siddiqi HK, Mehra MR. COVID-19 illness in native and immunosuppressed states: A clinical–therapeutic staging proposal. J Heart Lung Transplant. 2020 March 20;39(5):405-7. doi: 10.1016/j.healun.2020.03.012, PMID 32362390.
3. Mahmood Alabdali A, Chinnappan S, ABD Razik B, RM Khalivulla S, HR Samein L. Impact of COVID-19 on multiple organ failure: a review. International Journal of Applied Pharmaceutics. 2021 June 19;13(5):54-9.
4. Ahmad S. A review of COVID-19 (Coronavirus disease-2019) Diagnosis, treatments and prevention. Eurasian J Med Oncol. 2020 April 15. doi: 10.14744/ejmo.2020.90853.
5. Lima CMAO. Information about the new coronavirus disease (COVID-19). Radiol Bras. 2020;53(2):V-VI. doi: 10.1590/0100-3984.2020.53.2e1, PMID 32336833.
6. Dagan N, Barda N, Kepten E, Miron O, Perchik S, Katz MA. BNT162b2 mRNA covid-19 vaccine in a nationwide mass vaccination setting. N Engl J Med. 2021 April 15;384(15):1412-23. doi: 10.1056/NEJMoa2101765, PMID 33626250.
7. Niharika D, Niharika B, Aishwarya T, Nikitha A, Butool R, Ibrahim M. Coronavirus-a virus in learning. Int J Curr Pharm Sci. 2020 May 25;12(4):7-10. doi: 10.22159/ijcpr.2020v12i4.39078.
8. Sah R, Shrestha S, Mehta R, Sah SK, Rabaan AA, Dhama K. AZD1222 (Covishield) vaccination for COVID-19: experiences, challenges, and solutions in Nepal. Travel Med Infect Dis. 2021 Feb 10;40:101989. doi: 10.1016/j.tmaid.2021.101989, PMID 33578045.
9. Kulkarni M, Patel P, Yadav N, Gupta S. Clinical profile and outcomes of COVID-19 patients: a retrospective observational study from tertiary care centre in North India. SK T, Ravishekar NH, SK C. Asian J Pharm Clin Res. 2022;15(5):128-31.
10. SP, Sundararajan M, AM. Insights into corona/coronavirus disease 2019 pandemic–opinion versus evidence. Asian J Pharm Clin Res. 2021;14(7):13-5.
11. Riad A, Pokorna A, Attia S, Klugarova J, Koscik M, Klugar M. Prevalence of COVID-19 vaccine side effects among healthcare workers in the Czech Republic. J Clin Med. 2021 April 1;10(7):1428. doi: 10.3390/jcm10071428, PMID 33916020.
12. House CN, Palissery S, Sebastian H. Coronaviruses: a review on SARS, MERS, and COVID-19. Microbiol Insights. 2021 March 19;14:117863612110024.
13. Dhar Chowdhury S, Oommen AM. Epidemiology of COVID-19. J Dig Endosc. 2020 March;11(1):03-7. doi: 10.1055/s-0040-1712187.
14. Nalbandian A, Sehgal K, Gupta A, Madhavan MV, McGroder C, Stevens JS. Post-acute COVID-19 syndrome. Nat Med. 2021 March 22;27(4):601-15. doi: 10.1038/s41591-021-01283-z, PMID 33753937.
15. Arab Zozani M, Hashemi F, Safari H, Yousefi M, Ameri H. Health-related quality of life and its associated factors in COVID-19 patients. Osong Public Health Res Perspect. 2020 Oct;11(5):296-302. doi: 10.24171/j.phrp.2020.11.5.05, PMID 33117634.
16. Vahia IV, Jeste DV, Reynolds CF. Older adults and the mental health effects of COVID-19. JAMA. 2020;324(22):2253-4. doi: 10.1001/jama.2020.21753, PMID 33216114.
17. Martins Van Jaarsveld G. The effects of COVID-19 among the elderly population: A case for closing the digital divide. Front Psychiatry. 2020;11:577427. doi: 10.3389/fpsyt.2020.577427, PMID 33304283.
18. Walle Hansen MM, Ranhoff AH, Mellingsæter M, Wang Hansen MS, Myrstad M. Health-related quality of life, functional decline, and long-term mortality in older patients following hospitalisation due to COVID-19. BMC Geriatr. 2021 March 22;21(1):199. doi: 10.1186/s12877-021-02140-x, PMID 33752614.
19. McCartney PR. Sex-based vaccine response in the context of COVID-19. J Obstet Gynecol Neonatal Nurs. 2020;49(5):405-8. doi: 10.1016/j.jogn.2020.08.001, PMID 32800743.
20. Townsend L, Dyer AH, Jones K, Dunne J, Mooney A, Gaffney F. Persistent fatigue following SARS-CoV-2 infection is common and independent of the severity of initial infection. PLOS ONE. 2020 Nov 9;15(11):e0240784. doi: 10.1371/journal.pone.0240784, PMID 33166287.
21. Menni C, Klaser K, May A, Polidori L, Capdevila J, Louca P. Vaccine side-effects and SARS-CoV-2 infection after vaccination in users of the COVID Symptom Study app in the UK: a prospective observational study. Lancet Infect Dis. 2021 July;21(7):939-49. doi: 10.1016/S1473-3099(21)00224-3, PMID 33930320.