



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.



Disponible en ligne sur

ScienceDirect
www.sciencedirect.com

Elsevier Masson France

EM|consulte
www.em-consulte.com



Original article

Psychological assessment and lived experiences of recovered COVID-19 patients who presented for convalescent plasma donation

A. Maheshwari^a, M. Varshney^b, K. Gupta^a, M. Bajpai^{a,*}^a Department of Transfusion Medicine, Institute of Liver and Biliary Sciences, New Delhi, India^b Department of Psychiatry, Institute of Liver and Biliary Sciences, New Delhi, India

ARTICLE INFO

Article history:

Available online 22 April 2021

Keywords:

COVID-19
Convalescent plasma donor
Psychological status
Lived experiences
Quality of life

ABSTRACT

Background. – Increasingly, it has been seen that patients recovering from COVID-19 may face a second battle of coping with its mental health ramifications. These psychological issues can even be experienced by patients who were asymptomatic or had mild to moderate symptoms, potentially impacting their quality of life.

Methodology. – This was a prospective observational study to analyse the psychological impact of COVID-19 in recovered patients who presented as prospective convalescent plasma (CP) donors. An interview for the psychological assessment of the prospective donors was carried out. Depression and anxiety in the participants were assessed by HAM-A, and HAM-D scores and Quality of Life were assessed using the WHOQOL-BREF scale.

Results. – A total of 51 prospective donors were assessed, with a mean age of 34.37 (± 9.08) years, with the majority being males (46). No clinically significant depression and anxiety were found on the basis of HAM-D and HAM-A scores. The worst affected quality of life parameter, based on the WHOQOL-BREF scale, was physical quality of life followed by environmental, psychological, and social relationships. Moreover, due to infection, social stigma was experienced by 49.02% of the donors, while 21.97% had anxiety related to convalescent plasma donation as a common lived experience.

Conclusion. – Poor quality of life and social stigma during the recovery phase is prevalent in COVID-19 recovered patients, for which formulation of holistic support strategies are the need of the hour.

© 2021 Published by Elsevier Masson SAS on behalf of Société française de transfusion sanguine (SFTS).

1. Introduction

India has ranked second in the number of COVID-19 affected persons in the world. Currently, more than 100,00,000 have been infected people so far, with 1,000,000 plus deaths [1,2]. COVID-19 is swiftly affecting the global population, and at present, definitive treatments are still evolving [3,4]. This virus has a very high infectivity rate, as well as significant morbidity and mortality, which leads to fear and anxiety in the community concerning the risk of infection [5]. The medical and research fraternity from around the globe is trying to find the best possible modalities to combat this virus, and clinical trials on various antiviral therapies, monoclonal antibodies, hydroxychloroquine, dexamethasone, convalescent plasma therapy, and development of vaccines are ongoing [6,7]. Some vaccines have cleared the phase 3 trials, and

vaccination drives have been initiated in few countries, including India. At present, all patients are being treated with supportive measures using standard medical management. Governments have been taking crucial measures in the form of lockdowns, curfews, restricted entry in containment zones, and compulsory use of masks for minimizing the spread of SARS-CoV-2. Overall, the virus has had a profound impact on physical and mental health, emotional status, economic and social situation [8,9].

As per recent guidelines by the World Health Organization (WHO), psychological issues due to COVID-19 should be evaluated and addressed during the disease course and recovery [10,11]. It has increasingly been seen that patients recovering from COVID-19 may face a second battle of coping with the mental health ramifications of the disease. Even those patients who are asymptomatic or have mild to moderate symptoms can experience psychological issues while recovering from the illness, which can potentially impact their quality of life. It can be profound in the people who were infected and remained in isolation and quarantine during their disease course and recovery phase [12]. Moreover, recovering

* Corresponding author.
E-mail address: meenubajpai@gmail.com (M. Bajpai).

patients can face a significant degree of social stigma, even after testing negative for the virus [13,14]. Although numerous newspaper articles have mentioned these patients' lived experiences, there is no systematic study of the same. In the first phase of the COVID-19 pandemic, we need to explore various psychosocial aspects of convalescent plasma donation, which may determine motivational approaches to maintain the supply of convalescent plasma and blood products in the coming waves of the pandemic. Since the Institute of Liver and Biliary started the first Plasma bank for the collection of convalescent plasma from COVID-19 recovered patients in the country [15], we wish to analyze the psychological and emotional impact, and the lived experiences of the recovered COVID-19 patients.

2. Methodology

Study design and setting: it was a prospective observational study to analyse the psychological impact of COVID-19 amongst convalescent plasma (CP) donors at our centre; during the initial phase of the pandemic. Convalescent plasma collection was a part of a randomised control trial conducted at the same institute for evaluating the safety and efficacy of convalescent plasma as supportive therapy in severely ill COVID-19 patients, which was registered with clinicaltrials.gov (identifier: NCT04346446). Ethical approval was taken before the conduction of this study. All donors who had recovered from COVID-19 and were symptom-free and RT-PCR negative at least 14 days before donation were assessed for their mental health and emotional well-being. All the prospective CP donors were given necessary information regarding tests to be performed before the procedure, donation process, along with pre and post-donation advice by the counselor. For the purpose of this study, a separate informed consent was taken, and donors were informed that non-participation will have no consequences over their donation process.

Study procedure and tools: the donors were screened as per the rules laid down by the Drugs and Cosmetics Act and Rules and its further amendments [16]. Donation-related queries were acknowledged and resolved. They were advised to follow the guidelines laid by the government health authorities during the pandemic period. In the study, all donors underwent interviews for the psychological assessment which was conducted before revealing the deferral or acceptance results to the donors, hence eliminating the chances of negative emotions due to deferral. This step was done after obtaining written informed consent for CP donation. Their quality of life and lived experiences were recorded. If donors were deferred due to any medical reason, they were counseled and referred for further management.

The HDRS (Hamilton Depression Rating Scale or HAM-D) is the most widely used clinician-administered depression assessment scale. The original version contains 17 items (HDRS-17) regarding symptoms of depression experienced over the past week. The HDRS score range of 0–7 is generally accepted within the normal range, while a score of 20 or higher indicates at least a moderate severity of depression [17]. The HAM-A scale consists of 14 items; each item is defined by a series of symptoms and measures both psychic anxiety (mental agitation and psychological distress) and somatic anxiety (physical complaints related to the anxiety). Each item is scored on a scale of zero (not present) to four (severe), with a total HAM-A scale score range of 0–56, where < 17 indicates mild severity, 18–24 mild to moderate severity, and 25–30 moderate to severe [18]. Both the scales are freely available and have been previously used in clinical studies [19–21].

The WHOQOL-100 allows a detailed assessment of each facet related to the quality of life. The WHOQOL-BREF scale is an abbreviated version of the WHOQOL-100, and it contains 26 questions. For

Table 1
Demographic detail of convalescent plasma donors.

S. No.	Parameters	Values
1	Age (years)	34.37 ± 9.083
2	Gender (male)	90.20% (46)
3	Marital status (married)	84.31% (43)
4	Education (non-graduate/graduation and above)	41.176 (21)/58.823 (30)
5	Occupation (non-HCW)	78.43 (40)
6	Alcohol intake in last year ^a	19.6% (10)
7	Active tobacco use ^b	3.921% (2)
8	Accepted for donation	78.43% (40)
9	Deferred	21.57% (11)

HCW: health care workers.

^a Alcohol intake in any form.

^b Include both smoking and the smokeless route.

the provision of comprehensive assessment, one item from each of the 24 facets contained in the WHOQOL-100 was included in WHOQOL-BREF [22]. The interpretation of results is out of a score of 100 with higher scores denoting higher quality of life [23].

For lived experiences, donors were interviewed in privacy about their experiences during the recovery period, and a thematic analysis was done on the transcripts of interviews independently by two of the authors (AM and MV).

2.1. Statistical analysis

In the analysis, continuous variables were expressed in the median (range) and mean (SD). The frequency of different scores was analysed through percentages. Statistical analysis was done using SPSS software for windows version 22 (SPSS Inc., Chicago, IL).

3. Results

We assessed a total of 51 prospective donors. The mean age of donors was 34.37 ± 9.08 with a range of 20 to 52 years. Out of these, 46 (90.2%) were male, and 5 (9.8%) were females. Forty-three donors were married, and eight were single. On the analysis of education, we found that 30 (58.82%) were graduate and above, and 21 (41.18%) were below graduate level. Based on the occupation, donors were categorized into health care workers 11 (21.57%) and Non-health care workers 40 (78.4%). Out of the 51 donors evaluated, 40 male donors donated convalescent plasma, as shown in Table 1. Up to 500 mL, convalescent plasma was collected from all the eligible donors. None of the donors experienced any adverse reaction during the donation process and post-donation.

Depression and anxiety in participants: The mean HAM-A score was 5.63 (median = 4; SD = 3.24) in the participants (range 1–15). None of the participants scored above the mild severity level of anxiety (based on HAM-A > 17). Similarly, for depression, the mean HAM-D score was 8.51 (median = 8; SD = 3.33; range = 1–16), which is just around the cut-off level (< 7 scores on HAM-D). However, 31 out of 51 participants reported a score of ≥ 7, indicating some depressive symptoms. No participant reported a score of more than 20, the criteria for at least a moderate level of depression.

Quality of Life using the WHOQOL-BREF scale: using the standard WHO formula, scores were transformed for all four domains, as shown in Table 2. In the physical domain, the participants had a mean score of 46.41 (SD = 11.17) with a median of 44 and a range of 31–81, indicating the poor physical quality of life. The mean score in the psychological domain was 58.08 (SD = 11.91), with a median of 56 and a range of 31–81. In the social relationship domain, the mean score was 63.06 (median = 69; SD = 20.13) with a range of

Table 2
WHOQOL-BREF score in convalescent plasma donors.

	Physical domain		Psychological domain		Social relationships		Environmental domain	
	Physical raw score	Transformed 100	Psychological raw score	Transformed 100	Social relationship raw score	Transformed 100	Environmental raw score	Transformed 100
Mean \pm SD	20.02 \pm 3.22	46.41 \pm 11.2	19.88 \pm 2.7	58.08 \pm 11.9	10.49 \pm 2.4	63.06 \pm 20.1	24.76 \pm 4.6	54.08 \pm 14.4
Median (IQR)	19 (15.30)	44 (31.81)	20 (14.25)	56 (31.81)	11 (5.14)	69 (19.94)	25 (17.35)	56 (31.88)

IQR: interquartile range; a transformed score based on WHOQOL-BREF manual.

Table 3
Lived experiences in convalescent plasma donors.

S. No.	Lived experiences	Frequency (number)
1	"Fear of reinfection by hospital exposure"	50.98% (26/51)
2	"Social stigma"	49.02% (25/51)
3	"Anxious for donation"	21.57% (11/51)
4	"Stressed during the infection period"	11.76% (6/51)
5	"Repeated phone calls"	7.84% (4/51)
6	"Fear of being tracked/watched"	5.88% (3/51)
7	"Positive attitude"	1.96% (1/51)
8	"Agitated"	1.96% (1/51)

Based on thematic analysis of lived experience shared by convalescent plasma donors.

19–94. Lastly, the environmental domain had a mean score of 54.08 (median = 56; SD = 14.39) and range of 31–88.

LIVED experiences of COVID-19 recovered CP donors: during a confidential interview for psychological assessment, donors shared their lived experiences with the physician. A majority of donors [25 (49.02%)] experienced social stigma due to infection. Additionally, a significant proportion [26 (50.98%)] showed fear of reinfection by hospital exposure. A feeling of "Anxiety" for CP donation was noted in 11 (21.57%) donors, and 4 (7.84%) donors complained of repeated phone calls by police and local authorities. Some of the less frequent experiences like "fear of being tracked" by government authorities were reported by three donors (5.88%); feeling "stressed" during the infection period by six donors (11.76%); worry for the family by two donors (3.92%); feeling "guilt" for infecting family members by two donors (3.92%), as shown in Table 3. All the donors were distressed due to witnessing other COVID-19 patients' suffering in the hospitals during their stay. They were keen to help them in order to overcome the difficult situation showing an "empathic altruism".

4. Discussion

During the study period in India, when the number of cases was rising, the situation was getting worse day by day; both the physical and mental health of COVID-19 patients was affected due to the nature of the disease and associated isolation required in the post-disease phase. The convalescent plasma donors were a unique representation of recovered COVID-19 patients who have fought the disease and recovered. They were suitable individuals for the interview as they felt good and positive while expecting to be socially honored by donating convalescent plasma and helping other COVID-19 patients. Recruitment of convalescent plasma donors was tough and challenging as many were unwilling to come to the hospital setting after a lengthy stay at hospitals for COVID-19. We took steps to ensure a positive donor experience by arranging transportation for donors during the lockdown. We arranged a facility for interviews, counseling, and donation separate from patient areas in the hospital to allay prospective donors' fears. The personal attention was given to each donor for resolving their queries and doubts regarding the disease, its recovery process, and CP donation was done in a congenial environment. In our study, a significant proportion of recovered COVID-19 donors had crossed the screening cut-off of HDRS, but no participant crossed

the score for moderate depression. Possibly it could be due to CP donation in our study was voluntary, and hence those with higher levels of depression and anxiety were not likely to come forward for donation indicating the possibility of a sampling bias. The study also indicated impairment in physical and psychological quality of life (based on WHOQOL-BREF) of the participants, which has also been shown in previous studies among COVID-19 affected [24,25] and recovered patients at one month follow up [26]. We analysed the lived experiences during the COVID-19 disease period as well as during the recovery period. Approximately half of the CP donors reported feeling stigmatized during the recovery phase, and the same continued even after complete recovery. This finding was similar to the results from a study on COVID-19 recovered patients and healthcare workers from India and Nepal [13,27]. Another important aspect was the "fear of reinfection" among the participants. Reinfection is an imperative yet poorly understood phenomenon in this illness, and hence the fear seems justifiable in recovered patients [28,29]. There have been few isolated case reports about the same globally, and our study indicates that this is an important area where healthcare staff should discuss and allay the fears of the recovered patients.

In our study, major lived experiences in plasma donors were social stigma, fear of reinfection, and willingness to help other COVID-19 patients after encouragement by hospital staff and media persons. However, we also found that plasma donors were motivated by "empathy altruism" as a reason for the donation. Ferguson and Lawrence's famous mechanism of altruism (MOA) approach indicates that blood donors are not purely altruists, although they can be motivated by warm-glow and reluctant altruism. Their findings indicated that incentives, either charitable or financial, warm-glow appeals, reciprocal altruism, and empathy altruism could be the blood donation approach [30].

The study had some limitations considering the voluntary nature of CP donors studied, and hence the results are not generalizable to all patients. Moreover, CP donors represent only a proportion of COVID-19 recovered patients, and hence there might be a significant amount of psychological issues and lived experiences that could not have been captured in the current study. Additionally, this data was captured during the initial part of the pandemic, and considering the disease's evolving socio-economic ramifications, so these findings should be seen in context to its timing when knowledge regarding the disease was scarce. Since we did not have psychological condition data in recovered individuals during the early phase of pandemic (the period when the study was conducted), we did not attempt to compare with the general population. However, this could have added value to the objective findings of this study. Lastly, no systematic instrument was used to measure the lived experiences and qualitative verbatims were converted to themes and their frequencies are presented. Actual verbatim could have given more indepth understanding of their experiences.

Despite the limitations, this was the first systematic attempt to understand the psychological issues in COVID-19 recovered CP donors from India; to the best of our knowledge. Hence, this data can provide the basis of more extensive longitudinal studies to

understand and better address the needs of CP donors, and other COVID-19 recovered patients. Future studies should also try to understand the difference in psychosocial issues among voluntary and replacement donors. Moreover, a significant proportion of COVID-19 patients may never turn up for plasma donation, and hence studies should try to capture their needs as well.

5. Conclusion

Psychological assessment is an essential part of screening during donor counseling to resolve all queries and myths regarding donation. It also emphasizes the need for policymakers to plan awareness campaigns for educating the general population so that stigma can be reduced. This has the potential for improving the overall quality of life among recovered patients. The results of our study indicate those who have been recovered from COVID-19 should be screened and counseled accordingly for the depression and anxiety related to convalescent plasma donation and if required, they can be referred for holistic management. It will help to formulate new strategies for donor recruitment as motivation for convalescent plasma donation is a crucial thing in the COVID-19 pandemic era. There is a need to plan more extensive systematic studies in the COVID-19 recovered patients to understand all the factors associated with quality of life in these patients.

Funding

No funding was received by authors for the conduction of research and manuscript writing.

Contribution

Concept and design: MB, AM, and MV.
Acquisition, analysis or interpretation of data: AM, MV, and KG.
Drafting and critical revision of the manuscript for important intellectual content: MB, AM, MV, and KG.

Disclosure of interest

The authors declare that they have no competing interest.

Acknowledgment

Authors thanks Mr. Kailash Saini and Mr. Pankaj Jain for their continuous support during CP donations.

References

- [1] Balsari S, Sange M, Udawadia Z. COVID-19 care in India: the course to self-reliance. *Lancet Glob Health* 2020:e1359–60 [https://www.thelancet.com/journals/langlo/article/PIIS2214-109X(20)30384-3/Abstract].
- [2] Kumar SU, Kumar DT, Christopher BP, Doss CGP. The rise and impact of COVID-19 in India. *Front Med* 2020;7:250 [https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7256162/].
- [3] Dhampalwar S, Saigal S, Soim AS. Treatment Armamentarium of COVID-19: evolving strategies and evidence so far. *J Clin Exp Hepatol* 2020;10:599–609 [https://www.jcehepatology.com/article/S0973-6883(20)30101-8/Abstract].
- [4] Rahmanzade R, Rahmanzadeh R, Hashemian SM, Tabarsi P. Iran's approach to COVID-19: evolving treatment protocols and ongoing clinical trials. *Front Public Health* 2020;8:551889 [https://www.frontiersin.org/articles/10.3389/fpubh.2020.551889/full].
- [5] Lai J, Ma S, Wang Y, Cai Z, Hu J, Wei N, et al. Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019. *JAMA Netw Open* 2020;3:e203976 [Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7090843/. cited 2020 Oct 2].
- [6] Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet* 2020;395:497–506.
- [7] Gandhi RT, Lynch JB, del Rio C. Mild or moderate COVID-19. *N Engl J Med* 2020;383:1757–66 [https://www.nejm.org/doi/full/10.1056/NEJMcp2009249].
- [8] Varshney M, Parel JT, Raizada N, Sarin SK. Initial psychological impact of COVID-19 and its correlates in Indian Community: an online (FEEL-COVID) survey. *PLOS ONE* 2020;15:e0233874.
- [9] Fegert JM, Vitiello B, Plener PL, Clemens V. Challenges and burden of the Coronavirus 2019 (COVID-19) pandemic for child and adolescent mental health: a narrative review to highlight clinical and research needs in the acute phase and the long return to normality. *Child Adolesc Psychiatry Ment Health* 2020;14:20.
- [10] Shen C, Wang Z, Zhao F, Yang Y, Li J, Yuan J, et al. Treatment of 5 critically ill patients with COVID-19 with convalescent plasma. *JAMA* 2020;323:1582–9.
- [11] Serafini G, Parmigiani B, Amerio A, Aguglia A, Sher L, Amore M. The psychological impact of COVID-19 on the mental health in the general population. *QJM Int J Med* 2020;113:531–7.
- [12] Balachandrar V, Mahalaxmi I, Subramaniam M, Kaavya J, Kumar NS, Laldinmawii G, et al. Follow-up studies in COVID-19 recovered patients – is it mandatory? *Sci Total Environ* 2020;729:139021.
- [13] Singh R, Subedi M. COVID-19 and stigma: social discrimination towards front-line healthcare providers and COVID-19 recovered patients in Nepal. *Asian J Psychiatry* 2020;53:102222.
- [14] Li W, Yang Y, Ng CH, Zhang L, Zhang Q, Cheung T, et al. Global imperative to combat stigma associated with the coronavirus disease 2019 pandemic. *Psychol Med* 2020, 1–2. [https://doi.org/10.1017/S0033291720001993].
- [15] The Wire staff. Delhi Government creates first “plasma bank” to help treat COVID-19 patients. *Wire* 2020 [https://thewire.in/government/delhi-government-plasma-bank-covid-19-patients].
- [16] Choudhury N, Desai P. Blood bank regulations in India. *Clin Lab Med* 2012;32:293–9.
- [17] Hamilton M. Development of a rating scale for primary depressive illness. *Br J Soc Clin Psychol* 1967;6:278–96.
- [18] Maier W, Buller R, Philipp M, Heuser I. The Hamilton Anxiety Scale: reliability, validity and sensitivity to change in anxiety and depressive disorders. *J Affect Disord* 1988;14:61–8.
- [19] Malay G, Asish D, Sukhendu M, Ranadip C, Sarmila M. A study of applicability of hamilton depression rating scale in a tertiary psychiatry clinic of kolkata. *Natl J Community Med* 3, 2012, 247–51. [http://www.njcmindia.org/home/view/249/].
- [20] Kuruvilla PK, Chandran HS, Chengappa KNR. A commentary on the use of depression rating scales in clinical trials conducted in India. *Asian J Psychiatry* 2009;2:3–5.
- [21] Trivedi JK, Gupta PK. An overview of Indian research in anxiety disorders. *Indian J Psychiatry* 2010;52:S210–8.
- [22] Agnihotri K, Awasthi S, Chandra H, Singh U, Thakur S. Validation of WHO QOL-BREF instrument in Indian adolescents. *Indian J Pediatr* 2010;77:381–6.
- [23] Gholami A, Jahromi LM, Zarei E, Dehghan A. Application of WHOQOL-BREF in measuring quality of life in health-care staff. *Int J Prev Med* 2013;4:809–17.
- [24] Belli S, Balbi B, Prince I, Cattaneo D, Masocco F, Zaccaria S, et al. Low physical functioning and impaired performance of activities of daily life in COVID-19 patients who survived the hospitalisation. *Eur Respir J* 2020;56:2002096 [https://erj.ersjournals.com/content/early/2020/07/23/13993003.02096-2020.].
- [25] Slimani M, Paravlic A, Mbarek F, Bragazzi NL, Tod D. The relationship between physical activity and quality of life during the confinement induced by COVID-19 outbreak: a pilot study in Tunisia. *Front Psychol* 2020;11:1882 [https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7427614/].
- [26] Chen K-Y, Li T, Gong F-H, Zhang J-S, Li X-K. Predictors of health-related quality of life and influencing factors for COVID-19 patients, a follow-up at one month. *Front Psychiatry* 2020;11:668 [https://www.frontiersin.org/articles/10.3389/fpsy.2020.00668/full].
- [27] Bhattacharya P, Banerjee D, Rao TS. The “Untold” side of COVID-19: social stigma and its consequences in India, the “Untold” side of COVID-19: social stigma and its consequences in India. *Indian J Psychol Med* 2020;42:382–6.
- [28] Roy S. COVID-19 reinfection: myth or truth? *SN Compr Clin Med* 2020;1–4 [https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7255905/].
- [29] Victor Okhuese A. Estimation of the probability of reinfection with COVID-19 by the susceptible-exposed-infectious-removed-undetected-susceptible model. *JMIR Public Health Surveill* 2020;6:e19097.
- [30] Ferguson E, Lawrence C. Blood donation and altruism: the mechanisms of altruism approach. *ISBT Sci Ser* 2016;11:148–57.