

LETTER TO THE EDITORS

# COVID-19 health restrictions in a transplanted Italian cohort

Marco Maria Pascale<sup>1</sup> , Giuseppe Bianco<sup>1</sup>, Lorenzo Ferri<sup>2</sup> & Salvatore Agnes<sup>1,2</sup>

1 General Surgery and Liver Transplant Unit, Fondazione IRCCS – Policlinico Universitario “A. Gemelli”, Rome, Italy

2 General Surgery Unit, Fondazione IRCCS – Policlinico Universitario “A. Gemelli”, Rome, Italy  
E-mail: pascale.marco.maria@gmail.com

Dear Editor,

An exponential diffusion of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) prompted Italian institutions to take extraordinary healthcare restrictive measures since March 8, 2020, declaring quarantine for COVID-19 [1].

The whole population had to adapt to new limits, which were interestingly in line with the postdischarge indications given to liver recipients (LRs) in our Transplant Center.

The aim of this work was to analyze the tolerance to the health restrictions of LRs, comparing them with the rest of the Italian population.

We investigated the compliance of the 96 consecutive LRs discharged between January 2017 and March 2020 from our Center. Then, we created a web-based national survey, spread via social media, in order to create a standard of quarantine compliance involving the nontransplant population from all over Italy with an age  $\geq 18$  years (Fig. S1).

Furthermore, we performed a subgroup analysis between LRs and the nontransplanted population living in the same regions as LRs (local control group, LCG), in order to decrease bias related to the incidence of COVID-19 across Italy.

All data were analyzed using chi-square test and Student's *t*-test.

We created a survey with 510 participants who gave their informed consent to the survey.

In particular, we enrolled 76 LRs and 434 nontransplanted individuals. From the latter population, we obtained the LCG with 202 individuals.

Liver recipients' response rate was 79.2%. The response rate of the nontransplant population cannot be calculated due to the way the survey is administered.

The LRs were confirmed to be older than the nontransplant population (median age 58 years vs. 44.5 years,  $P < 0.001$ ), with more male individuals among LRs than in the nontransplant population (81.6% vs. 30.9%,  $P < 0.001$ ), in line with the data in the literature [2] (Table 1A).

Social distancing was respected homogeneously in all three time ranges examined (0–14, 15–30, >30 days), by both the LRs and the nontransplant population; no differences were found also comparing the LRs with the LCG.

Indeed, the low rate of SARS-CoV2 swab tests recorded in both the LRs and the nontransplant population (6.6% and 1.8%, respectively) was in favor of a good self-isolating.

A continuous use of the personal protective equipment (PPE) was present in 94.7% among LRs, compared with 76% in the nontransplant population ( $P < 0.001$ ) and 73.8% in the LCG ( $P < 0.001$ ).

In the subgroup analysis (Table 1B), among participants respecting a maximum social distancing  $\geq 30$  days, the LRs reported a greater constant use of PPE than the nontransplant population (100% vs. 78.8%,  $P = 0.02$ ) and the LCG (100% vs. 80.6%,  $P = 0.02$ ).

Also, in the subgroup analysis among participants with a maximum social distancing  $\leq 15$  days, the continuous use of PPE is higher in LRs (94.3%), than in the nontransplant population (70.6%,  $P = 0.003$ ) and the LCG (66.7%,  $P = 0.001$ ).

Liver recipients are a population at high risk of infection [3]. A strict outpatient follow-up and an increased awareness in LRs about prevention measures are fundamental to reduce post-transplant complications [4].

Liver recipients manage to consider health restrictions as a useful instrument, acquiring a fundamental advantage in a pandemic.

In our series, LRs prove high levels of tolerance with COVID-19-related restrictions, partly explaining lower incidence of SARS-CoV-2 infection in transplant population [5].

Our data also confirm the good compliance of the nontransplant population, too.

**Table 1.** Results of comparison analysis. (A) Comparison of LRs with nontransplant population and subgroup analysis with local control group. (B) Subgroup analysis for PPE compliance, according to the maximum period of social distancing  $\leq 15$  days or  $\geq 30$  days.

(A)	Liver recipients (n = 76)		Nontransplant population (n = 434)		Local control group (n = 202)		P value
	n	(%)	n	(%)	n	(%)	
Median age, years	58		44.5		44.5		<0.001
Male sex, n (%)	62	(81.6%)	134	(30.9%)	58	(28.7%)	<0.001
Maximum period of social distancing							
0–14 days, n (%)	31	(40.8%)	207	(47.7%)	97	(48%)	0.3
15–30 days, n (%)	23	(30.2%)	106	(24.4%)	48	(23.8%)	0.3
>30 days, n (%)	22	(29%)	121	(27.9%)	57	(28.2%)	0.9
Social distancing interruption reason							
Purchases, n (%)	n.d.		280	(64.5%)	133	(65.8%)	–
Work, n (%)	n.d.		74	(17.1%)	30	(14.9%)	–
Pet care, n (%)	n.d.		34	(7.8%)	16	(7.9%)	–
Other, n (%)	n.d.		46	(10.6%)	23	(11.4%)	–
Use of PPE							
Always, n (%)	72	(94.7%)	330	(76%)	149	(73.8%)	<0.001
Sometimes, n (%)	4	(5.3%)	68	(15.7%)	36	(17.8%)	0.008
Never, n (%)	0	(0%)	36	(8.3%)	17	(8.4%)	0.009
Swab test, n (%)	5	(6.6%)	8	(1.8%)	6	(2.9%)	0.2
Positive swab test, n (%)	1	(1.3%)	4	(0.9%)	3	(1.5%)	–
Maximum period of social distancing $\leq 15$ days							
(B)	Liver recipients (n = 35)		Local control group (n = 108)		Nontransplant population (n = 156)		P value
	n	(%)	n	(%)	n	(%)	
Use of PPE							
Always, n (%)	33	(94.3%)	72	(66.7%)	123	(78.8%)	0.02
Sometimes, n (%)	2	(5.7%)	27	(25%)	20	(12.8%)	0.06
Never, n (%)	0	(0%)	9	(8.3%)	13	(8.3%)	0.1
Maximum period of social distancing $\geq 30$ days							
(B)	Liver recipients (n = 24)		Local control group (n = 72)		Nontransplant population (n = 156)		P value
	n	(%)	n	(%)	n	(%)	
Use of PPE							
Always, n (%)	24	(100%)	58	(80.6%)	58	(80.6%)	0.02
Sometimes, n (%)	0	(0%)	7	(9.7%)	7	(9.7%)	0.1
Never, n (%)	0	(0%)	7	(9.7%)	7	(9.7%)	0.1

n.d., no data; n, number; PPE, personal protective equipment.

The main limit of this work is the monocentric design with LRs out of the area with the highest COVID-19 incidence.

The compliance of the population with the social distancing measures is fundamental to reduce the spread of SARS-CoV-2 [6,7].

The tolerance of a high-risk group can be used as a benchmark.

### Conflict of interest

The authors of this manuscript have no conflicts of interest to disclose as described by Transplant International.

### Funding

The authors have declared no funding.

### SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of the article.

**Figure S1.** Distribution of survey participants from all over Italian regions, in relation with COVID-19 incidence (updated to 7th May [1]).

### REFERENCES

1. ISS per COVID-19. Istituto Superiore di Sanità. [Online] <https://www.iss.it/corona-virus>.
2. Kim WR, Lake JR, Smith JM, *et al.* OPTN/SRTR 2017 annual data report: liver. *Am J Transplant* 2019; **19**(Suppl 2):184.
3. Gagliotti C, Morsillo F, Moro ML, *et al.* Infections in liver and lung transplant recipients: a national prospective cohort. *Eur J Clin Microbiol Infect Dis* 2018; **37**: 399.
4. Abbas S, Raybould JE, Sastry S, de la Cruz O. Respiratory viruses in transplant recipients: more than just a cold. Clinical syndromes and infection prevention principles. *Int J Infect Dis* 2017; **62**: 86.
5. Tschopp J, L'Huillier AG, Mombelli M, *et al.* First experience of SARS-CoV-2 infections in solid organ transplant recipients in the Swiss Transplant Cohort Study. *Am J Transplant* 2020). <https://doi.org/10.1111/ajt.16062>.
6. Chan JF, Yuan S, Kok KH, *et al.* A familial cluster of pneumonia associated with the 2019 novel coronavirus indicating person-to-person transmission: a study of a family cluster. *Lancet* 2020; **395**: 514.
7. Control, European Centre for Disease Prevention. Guide to public health measures to reduce the impact of influenza pandemics in Europe: 'The ECDC Menu'. ECDC. [Online] September 2009. [https://www.ecdc.europa.eu/sites/default/files/media/en/publications/Publications/0906\\_TER\\_Public\\_Health\\_Measures\\_for\\_Influenza\\_Pandemics.pdf](https://www.ecdc.europa.eu/sites/default/files/media/en/publications/Publications/0906_TER_Public_Health_Measures_for_Influenza_Pandemics.pdf).