Peertechz

MEDICAL GROUP

JOURNAL OF Vaccines and Immunology OPEN ACCESS JOURNAL

ISSN: 2640-7590 DOI: https://dx.doi.org/10.17352/jvi

Research Article

Impact of the COVID-19 pandemic on work capacities of researchers: An overlooked problem

Ferdinando D'Amico[1,2], Didier Mainard[3], Cedric Baumann[4] and Laurent Peyrin-Biroulet[2]*

[1]Department of Biomedical Sciences, Humanitas University, Pieve Emanuele, Milan, Italy

[2]Department of Gastroenterology and Inserm NGERE U1256, University Hospital of Nancy, University of Lorraine, Vandoeuvre-lès-Nancy, France

[3]CHRU, Hôpital Central, 29, avenue du Maréchal de Lattre-de-Tassigny, 54000 Nancy, France

[4]Methodology, Data Management and Statistic Unit, MPI Department, University Hospital of Nancy, Vandoeuvre-lès-Nancy, France

Received: 12 May, 2021
Accepted: 20 May, 2021
Published: 21 May, 2021

***Corresponding author:** Laurent Peyrin-Biroulet, MD, PhD, Professor, Inserm NGERE and Department of Gastroenterology, Nancy University Hospital, University of Lorraine, 1 Allée du Morvan, 54511 Vandoeuvre-lès-Nancy, France, Tel: (+33) 383153661; Fax: (+33) 383153633; E-mail: peyrinbiroulet@gmail.com

ORCID: https://orcid.org/0000-0003-2536-6618

Keywords: COVID-19; Research; Teaching; Work from home

https://www.peertechzpublications.com

Check for updates

Abstract

Background: The new coronavirus pandemic has substantially changed research and teaching activities. The aim of our survey was to investigate the impact of the current health emergency on teaching and research activities, focusing on the perspectives of research unit members.

Methods: This was an anonymous web-survey conducted between April 29 and May 6, 2020. All members of the center of Biology, Medicine, and Health sciences (BMS) of the Lorraine University were invited to participate in this survey through collective e-mails.

Results: Eighty-three subjects participated in our survey. Research activities were totally (86.8%) or partially (75.9%) stopped in most centers and most of respondents were working from home occasionally (15.7%) or every day (78.3%). The main activity during lockdown was writing original articles from already collected data (39.8%). More than a third of the respondents (39.7%) reported remarkable reduction in their work. Similarly, most of conferences (82%) and internships (73.3%) were canceled and graduation of students were postponed in 58.8% of cases.

Conclusions: Work from home was a valid alternative to workplace activities during the pandemic. Further studies are needed to evaluate the long-term effects of this new approach on quality of research and teaching.

Introduction

Since December 2019, the new coronavirus (SARS-CoV-2) outbreak has globally disrupted lives and habits of all people in a few months [1,2]. Infection can be easily transmitted through contact, aerosol, or droplet, and fecal-oral transmission cannot be excluded [3,4]. Social distancing measures were adopted to prevent its spread, including suspension of all non-essential work activities and non-urgent movement [5,6]. Research and university staff were not excluded from these recommendations [7,8]. As of May 1, 2020 in the "Grand Est" region of France including Alsace, Champagne-Ardenne and Lorraine, 3824 patients were hospitalized of which 517 in intensive care unit and 2915 people had died from COVID-19 since the beginning of the pandemic[9]. At the time of writing, the lockdown was set in the Lorraine region by the government authorities according to a national Business Continuity Plan (BCP) [10]. To limit the risk of contagion, most researchers were working from home and all face-to-face teaching activities were interrupted and replaced by online teaching. A significant reduction in research time was reported, leading to a lower number of publications, particularly among female researchers [11–14]. The center of

Citation: D'Amico F, Mainard D, Baumann C, Biroulet LP (2021) Impact of the COVID-19 pandemic on work capacities of researchers: An overlooked problem. J Vaccines Immunol 7(1): 014-019. DOI: https://dx.doi.org/10.17352/jvi.000040

Biology, Medicine, and Health sciences (BMS) of the Lorraine University initiated an anonymous online survey to investigate the impact of the current health emergency on teaching and research activities. We focused on the perspectives of research unit members in order to assess how the researchers' work changed during the COVID-19 pandemic.

Methods

A 35-question anonymous survey was conducted between April 29 and May 6, 2020. All 150 members of the BMS center of the Lorraine University (research directors, researchers, full professors, associate professors, PhD students, post PhDs, research engineers, project engineers, assistant engineers, technicians, and technical assistants) were invited to participate in this survey through collective e-mails. Patients were not involved in this survey. The questionnaire was initially developed in French and was later translated into English by native English speakers. The questionnaire was mainly based on multiple-choice questions about organizational information during the pandemic and any changes to research and teaching activities. In addition, there were questions about the perspectives of the research unit members. Participants were asked to numerically evaluate from 1 to 10 (where 1 indicated the most negative value and 10 the most positive value) the impact of the health crisis on different aspects of their work (e.g. research activity, scientific productivity, home efficiency, and morale). Results from 1 to 4.9 were graded of little importance, from 5 to 7.9 of moderate importance, and those > 8 of significant importance.

Results

Eighty-three people (55.3%) joined our survey (Table 1). Mean age of participants was 39.2 years (± 10.5) and most of them were married with children (37.4%). The most represented subjects were PhD students (21/83, 25.4%) and associate professors (19/83, 23%). Four people (4.8%) reported being tested for coronavirus and none were positive. The BCP was applied by most centers (71/83, 85.5%) and reorganization of the activities was carried out in about three quarters of cases (62/83, 74.7%). Research and administrative activities were totally (86.8%) or partially (75.9%) stopped in most centers. Interestingly, three quarters of respondents were not attending the research unit during the lockdown (63/83, 75.9%) and most of them were working from home occasionally (13/83, 15.7%) or every day (65/83, 78.3%). Conversely, about a quarter of people (24.1%) were attending research units and in most cases (90%) these activities were related to BCP. Social distancing measures at workplace were always respected by about two thirds of respondents (54/83, 65.1%). The main activity during lockdown was writing original articles from already collected data (33/83, 39.8%). A relevant percentage of people reported slight (17/83, 20.5%), moderate (12/83, 14.5%), or remarkable (33/83, 39.7%) reduction in their work. In most cases ongoing research protocols were completely (53/83, 63.9%) or partially (7/83, 20.5%) stopped, while in the few centers that maintained protocols active (5/83, 6%) the main reasons for studies' continuation were management of laboratory animals (10), priority protocols (4), and protocols almost completed at the start of the health crisis (4). Importantly, a small percentage of respondents (11/83, 13.2%) started working on coronavirus and only a few subjects (12/83, 14.5%) were interested in projects dedicated to COVID-19. As for teaching activity, lockdown prevented many subjects (29/47, 61.7%) from participating in university graduation committees, and graduation of students were postponed in over half of cases (20/34, 58.8%). Six people were members of a university graduation committee by videoconference and this approach was considered of very poor (2/6, 33.3%) or less good (2/6, 33.3%) quality compared to traditional face-to-face discussion. Furthermore, most of conferences (41/50, 82%) and internships (33/45, 73.3%) were canceled. The main concerns of the researchers were related to delay in progress of ongoing studies (65/83, 78.3%) and impossibility of generating new results (56/83, 67.5%). Working from home negatively affected researchers' efficiency in a moderate way (5.6 ± 2.23), while little importance was attributed to difficulties of communicating remotely with colleagues (2.51 ± 2.0) or to the impact of health crisis on research activity (3.77 ± 2.0), scientific productivity (4.21 ± 2.35), teaching activity (4.04 ± 2.31), or one's morale (4.55 ± 2.0). On average, the health crisis was not perceived as an opportunity for professional activity (4.10 ± 2.78) and half of subjects (45/83, 54.2%) reported that they wanted to change some aspects of job, working more from home (32/83, 38.6 %), seeing work problems with another perspective (26/83, 31.3%), and creating more relationships with colleagues (11/83, 13.2%).

Discussion

This survey evaluated the impact of the coronavirus outbreak on research and teaching activities. Most of the activities have been stopped and many researchers are working from home, negatively impacting their efficiency. This is probably due to the lack of motivation and dedicated workplaces, and the distractions that can affect home working (e.g. the presence family members). Unfortunately, it is not known how long the health emergency will last and when it will be possible to return to the usual work routine. What is certain is that the pandemic has led to a rapid change in the way of working in the field of research and university. In this context, some precautions could help increasing work productivity: to schedule the work, to behave in the same way as when you go to the research unit, to exercise, and to keep in touch with colleagues [15]. Teaching activity was greatly influenced by the emergency as all face-to-face activities were prohibited. Most of the conferences and internships were canceled, while the students' graduations were postponed or discussed by teleconference with questionable results. Our data are confirmed by other studies which report that approximately 80% of clinical trials were stopped or interrupted during the pandemic, while most research activities were suspended [16]. Conversely, the number of scientific publications was not reduced, supporting alternative working approaches [16,17]. The main limitation of our survey is the lack of data from research units from other countries. However, it is important to underline that the restrictions imposed in France are similar to those of many other countries in the world and therefore it is likely that colleagues from other countries are facing

Citation: D'Amico F, Mainard D, Baumann C, Biroulet LP (2021) Impact of the COVID-19 pandemic on work capacities of researchers: An overlooked problem. J Vaccines Immunol 7(1): 014-019. DOI: https://dx.doi.org/10.17352/jvi.000040

Table 1: Survey results.

	n (%)
Characteristics of the respondents	
Respondents to the survey	83/150 (55.3%)
1. Mean age (years), ± SD (min-max)	39.2 ± 10.5 (23-62)
2. What is your family situation ?	
- Unmarried	20/83 (24.1%)
- Unmarried with children	8/83 (9.6%)
- Married	24/83 (28.9%)
- Married with children	31/83 (37.4%)
3. What is your professional status?	
- Research Director	2/83 (2.4%)
- Researcher	7/83 (8.4%)
- Full professor	7/83 (8.4%)
- Associate professor	19/83 (23%)
- Post PhD	3/83 (3.6%)
- PhD student	21/83 (25.4%)
- Research engineer	7/83 (8.4%)
- Project engineer	6/83 (7.2%)
- Assistant engineer	2/83 (2.4%)
- Technician	5/83 (6%)
- Technical assistant	0
- Other	4/83 (4.8%)
4. Have you been tested for COVID-19?	
- Yes	4/83 (4.8%)
- No	77/83 (92.8%)
- I would rather not answer	2/83 (2.4%)
5. If you answered Yes to question 4, was the test positive?	
- Yes	0
- No	4/4 (100%)
6. Has your research unit been reorganized due to the health crisis (specific recommendations, loan of computer equipment, personal support, etc.)?	
- Yes	62/83 (74.7%)
- No	21/83 (25.3%)
7. Have research activities stopped in your research unit?	
- Yes, totally	33/83 (39.8%)
- Yes, partially	39/83 (47%)
- No	11/83 (13.2%)
8. Have administrative activities stopped in your research unit?	
- Yes, totally	7/83 (8.4%)
- Yes, partially	56/83 (67.5%)
- No	20/83 (24.1%)
9. Has the business continuity plan (BCP) been applied in practice in your research unit?	
- Yes, totally	50/83 (60.2%)
- Yes, partially	21/83 (25.3%)
- No	2/83 (2.4%)
- Do not know	10/83 (12.1%)
10. Are you attending your research unit during lockdown?	
- Yes, every day	1/83 (1.2%)
- Yes, occasionally	19/83 (22.9%)
- No	63/83 (75.9%)
11. If yes to question 10, is it in the context of the BCP?	
- Yes	18/20 (90%)
- No	2/20 (10%)
12. Do you respect the social distancing measures at your workplace (research activities, face-to-face meetings, lunch breaks etc.)?	
- Always	54/83 (65.1%)
- Most of the time	17/83 (20.5%)
- Sometimes	4/83 (4.8%)
- Rarely	8/83 (9.6%)
13. Are you working from home?	
- Yes, every day	65/83 (78.3%)
- Yes, occasionally	13/83 (15.7%)
- No	5/83 (6%)

Citation: D'Amico F, Mainard D, Baumann C, Biroulet LP (2021) Impact of the COVID-19 pandemic on work capacities of researchers: An overlooked problem. J Vaccines Immunol 7(1): 014-019. DOI: https://dx.doi.org/10.17352/jvi.000040

14. What is your main activity during the lockdown?	
- Writing original articles from already collected data	33/83 (39.8%)
- Writing reviews	9/83 (10.8%)
- Drafting new research protocols	2/83 (2.4%)
- Writing new projects for funding requests	4/83 (4.8%)
- Coordination of national or international research projects	2/83 (2.4%)
- Implementation of research projects	1/83 (1.2%)
- Continuation of ongoing protocols	3/83 (3.6%)
- Maintenance of cell lines or management of laboratory animals	5/83 (6%)
- Teaching activity	13/83 (15.7%)
- Other	11/83 (13.3%)
Information on research and teaching activities	
15. Have you reduced the time spent on research due to the health crisis?	
- Not at all	21/83 (25.3%)
- A little	17/83 (20.5%)
- Moderately	12/83 (14.5%)
- A lot	33/83 (39.7%)
16. Have you stopped ongoing research protocols due to the health crisis?	
- Yes, all protocols	53/83 (63.9%)
- Yes, some protocols	17/83 (20.5%)
- No	5/83 (6%)
- Not applicable	8/83 (9.6%)
17. Why did you maintain some or all your protocols (multiple choices are allowed)?	
- Maintenance of cell lines	2
- Management of laboratory animals	10
- Priority protocol	4
- Protocol almost completed at the start of the health crisis	4
- Protocol requested after revision of an article already submitted	2
- Need to use reagents or kits with a close expiration date	0
- Other	12
- Not applicable	57
18. What is the impact of this health crisis on your national and / or international research collaborations (multiple choices are allowed)?	
- Complete termination of existing collaborations	9/83 (10.8%)
- Difficulties in maintaining existing collaborations	19/83 (22.9%)
- No impact on existing collaborations	23/83 (27.7%)
- Improvement of existing collaborations	4/83 (4.8%)
- Creation of new collaborations	6/83 (7.2%)
- Not applicable	29/83 (34.9%)
19. Since the beginning of this health crisis, have you started working on COVID-19?	
- Yes	11/83 (13.2%)
- No	72/83 (86.8%)
20. Would you like to submit a project dedicated to COVID-19?	
- Yes	12/83 (14.5%)
- No	71/83 (85.5%)
21. Have you postponed the graduation of your students due to the health crisis?	
- Yes	20/83 (24.1%)
- No	14/83 (16.9%)
- Not applicable	49/83 (59%)
22. Have the health crisis impacted your participation in university graduation committee?	
- Yes	29/83 (34.9%)
- No	18/83 (21.7%)
- Not applicable	36/83 (43.4%)
23. If you have been a member of a graduation committee by videoconference, how do you evaluate the quality of this approach compared to the traditional face-to-face discussion?	
- Very poor	2/83 (2.4%)
- Less good	2/83 (2.4%)
- Equivalent	2/83 (2.4%)
- Better	0
- Not applicable	77/83 (92.8%)
24. Have you canceled one or more conferences (local, national, or international) to present your projects due to the health crisis ?	
- Yes	41/83 (49.4%)
- No	9/83 (10.8%)
- Not applicable	33/83 (39.8%)
25. Have you canceled internships due to the health crisis?	
- Yes	33/83 (39.8%)
- No	12/83 (14.4%)
- Not applicable	38/83 (45.8%)

Citation: D'Amico F, Mainard D, Baumann C, Biroulet LP (2021) Impact of the COVID-19 pandemic on work capacities of researchers: An overlooked problem. J Vaccines Immunol 7(1): 014-019. DOI: https://dx.doi.org/10.17352/jvi.000040

Researchers' perspectives	
26. Which one(s), among the constraints listed below, is worrying you more? Please tick your 3 main constraints.	
- Unable to generate new results	56/83 (67.5%)
- Delay in progress of ongoing projects	65/83 (78.3%)
- Inability to start new projects / protocols	37/83 (44.6%)
- Inability to access platforms	15/83 (18.1%)
- Limited availability of technical staff	6/83 (7.2%)
- Unable to welcome master students	18/83 (9.6%)
- Kits management	0
- Maintenance of cell lines or management of laboratory animals	11/83 (13.2%)
- Problems placing orders (reagents, animals, etc.)	8/83 (9.6%)
- Other	6/83 (7.2%)
- No constraint	5/83 (6%)
27. How would you rate the impact of working from home on your job efficiency using a scale from 1 to 10?	
- Respondents	77/78 (98.7%)
- Mean value ± SD (min-max)	5.6 ± 2.23 (1-10)
28. How would you rate the difficulties experienced in communicating remotely with your colleagues (internet connection problems etc.) using a scale from 1 to 10?	
- Respondents	83/83 (100%)
- Mean value ± SD (min-max)	2.51 ± 2.0 (1-9)
29. How would you rate the impact of this health crisis on your research activity using a scale from 1 to 10?	
- Respondents	83/83 (100%)
- Mean value ± SD (min-max)	3.77 ± 2.0 (1-10)
30. How would you rate the impact of the health crisis on your work / scientific productivity using a scale from 1 to 10?	
- Respondents	83/83 (100%)
- Mean value ± SD (min-max)	4.21 ± 2.35 (1-10)
31. Do you consider this health crisis as an opportunity for your professional activity (more time to prepare future projects, more time to work on old unfinished projects etc.)?	
- Respondents	83/83 (100%)
- Mean value ± SD (min-max)	4.10 ± 2.78 (1-10)
32. If you have a teaching activity, how would you rate the impact of this health crisis on your teaching activity using a scale from 1 to 10?	
- Respondents	46/83 (55.4%)
- Mean value ± SD (min-max)	4.04 ± 2.31 (1-10)
33. How would you rate the impact of the health crisis on your morale using a scale from 1 to 10?	
- Respondents	83/83 (100%)
- Mean value ± SD (min-max)	4.55 ± 2.0 (1-10)
34. After this health crisis, will you change the way you work?	
- Yes	45/83 (54.2%)
- No	17/83 (20.5%)
- Do not know	21/83 (25.3%)
35. If you answered Yes to question 33, please specify how you would change your job (multiple choices are allowed):	
- To work more from home	32/83 (38.6%)
- To invest less time in your professional activity	4/83 (4.8%)
- To invest more time in your professional activity	9/83 (10.8%)
- To see professional problems with a different perspective	26/83 (31.3%)
- To take more vacation	6/83 (7.2%)
- To take less vacation	3/83 (3.6%)
- To create more relationships with your colleagues	11/83 (13.2%)
- To create fewer relationships with your colleagues	0
- To organize more outings with your team members	5/83 (6%)
- To retrain you professionally	4/83 (4.8%)
- Other	4/83 (4.8%)

n= number

the same type of problems, suggesting that our data may be representative and reproducible. The workplace activity is not replaceable, but until the lockdown is overcome and suitable social distancing measures will be adopted in the workplace together with the availability of personal protective equipment for all workers, work from home will be a valid alternative. During the pandemic, the number of scientific publications significantly increased [11,18]. This could be explained by the limitations imposed by home working, which prompted researchers to focus primarily on writing papers rather than conducting science. On the other hand, the impact of home working on teaching activities is not yet known. An important challenge for the resumption of didactic activities will be not only the need to guarantee individual protective aids for all students and teachers, but also to modify and to implement teaching methods with new e-learning techniques. Finally, in the coming months it will have to be established whether home working represents only a temporary and occasional remedy to a situation of need or if it is an additional option for the world of research.

Citation: D'Amico F, Mainard D, Baumann C, Biroulet LP (2021) Impact of the COVID-19 pandemic on work capacities of researchers: An overlooked problem. J Vaccines Immunol 7(1): 014-019. DOI: https://dx.doi.org/10.17352/jvi.000040

Conclusion

The researchers' work underwent major changes during the SARS-CoV-2 pandemic due to the suspension of many activities and the implementation of smart working. Surprisingly, the pandemic had scarcely affected the productivity of the research unit members, underlining how smart working could be a valid alternative to workplace activities.

Author's contribution

LPB conceived the study. DM, and CB developed the survey questionnaire. FD wrote the first draft and created the table. LPB critically reviewed the content of the paper. All authors discussed the results and contributed to the final manuscript.

Conflict of interest

F D'Amico declares no conflict of interest. D Mainard declares no conflict of interest. C Baumann declares no conflict of interest. L Peyrin-Biroulet has served as a speaker, consultant and advisory board member for Merck, Abbvie, Janssen, Genentech, Mitsubishi, Ferring, Norgine, Tillots, Vifor, Hospira/Pfizer, Celltrion, Takeda, Biogaran, Boerhinger-Ingelheim, Lilly, HAC- Pharma, Index Pharmaceuticals, Amgen, Sandoz, For- ward Pharma GmbH, Celgene, Biogen, Lycera, Samsung Bioepis, Theravance.

References

1. Nelson LM, Simard JF, Oluyomi A, Nava V, Rosas LG, et al. (2020) US Public Concerns About the COVID-19 Pandemic From Results of a Survey Given via Social Media. JAMA Intern Med 180: 1020-1022.
2. Zhu N, Zhang D, Wang W, Li X, Yang B, et al. (2020) A Novel Coronavirus from Patients with Pneumonia in China, 2019. N Engl J Med 382: 727-733. Link: https://bit.ly/3r3xSgL
3. Priyanka, Choudhary OP, Singh I, Patra G (2020) Aerosol transmission of SARS-CoV-2: The unresolved paradox. Travel Med Infect Dis 37: 101869. Link: https://bit.ly/3fuxQtT
4. D'Amico F, Baumgart DC, Danese S, Peyrin-Biroulet L (2020) Diarrhea During COVID-19 Infection: Pathogenesis, Epidemiology, Prevention, and Management. Clin Gastroenterol Hepatol 18: 1663-1672. Link: https://bit.ly/3hFzdZq
5. Prem K, Liu Y, Russell TW, Kucharski AJ, Eggo RM, et al. (2020) The effect of control strategies to reduce social mixing on outcomes of the COVID-19 epidemic in Wuhan, China: a modelling study. Lancet Public Health 5: e261–e270. Link: https://bit.ly/2Rx1mam
6. Nussbaumer-Streit B, Mayr V, Dobrescu AI, Chapman A, Persad E, et al. (2020) Quarantine alone or in combination with other public health measures to control COVID-19: a rapid review. Cochrane Database Syst Rev 4: CD013574. Link: https://bit.ly/3wlDyou
7. Derrick G (2020) How COVID-19 lockdowns could lead to a kinder research culture. Nature 581: 107-108. Link: https://bit.ly/3bGo7zw
8. Peyrin-Biroulet L, Ananthakrishnan AN (2020) Clinical Research and Trials-A "Nonessential" Victim of the COVID-19 Pandemic? Am J Gastroenterol 115: 946-947. Link: https://bit.ly/3hFvsmH
9. Anon. Infographies. Covid-19 : 32 décès supplémentaires dans le Grand Est et 17 en Bourgogne Franche-Comté ; 587.686 personnes ont reçu les deux doses du vaccin. Available at: Link: https://bit.ly/3yolEDu
10. Anon. Macron announces 15-day lockdown in French "war" on coronavirus. France 24 2020. Available at: https://www.france24.com/en/20200316-live-france-s-macron-addresses-nation-amid-worsening-coronavirus-outbreak [Accessed January 14, 2021].
11. Viglione G (2020) Are women publishing less during the pandemic? Here's what the data say. Nature 581: 365-366. Link: https://bit.ly/3yoLBTj
12. Gabster BP, Daalen van K, Dhatt R, Barry M (2020) Challenges for the female academic during the COVID-19 pandemic. Lancet 395: 1968-1970. Link: https://bit.ly/340nOve
13. Andersen JP, Nielsen MW, Simone NL, Lewiss RE (2020) COVID-19 medical papers have fewer women first authors than expected. Elife 9: e58807. Link: https://bit.ly/3fuyMOV
14. Myers KR, Tham WY, Yin Y, Cohodes N, Thursby JG, et al. (2020) Unequal effects of the COVID-19 pandemic on scientists. Nat Hum Behav 4: 880–883. Link: https://bit.ly/3u5J5hz
15. Papalampropoulou-Tsiridou M (2020) Finding motivation while working from home as a PhD student during the coronavirus pandemic. Nature 2020. Link: https://go.nature.com/3fBlUGR
16. The Lancet (2021) Science during COVID-19: where do we go from here? Lancet 396: 1941. Link: https://bit.ly/3v7N3aE
17. Gianola S, Jesus TS, Bargeri S, Castellini G (2020) Characteristics of academic publications, preprints, and registered clinical trials on the COVID-19 pandemic. PLoS One 15. Link: https://bit.ly/3bFC153
18. Else H (2020) How a torrent of COVID science changed research publishing - in seven charts. Nature 588: 553. Link: https://bit.ly/3hJPxZ1

Citation: D'Amico F, Mainard D, Baumann C, Biroulet LP (2021) Impact of the COVID-19 pandemic on work capacities of researchers: An overlooked problem. J Vaccines Immunol 7(1): 014-019. DOI: https://dx.doi.org/10.17352/jvi.000040