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Short Communication

Going to work with COVID-19 symptoms among non-sanitary (or socio-sanitary) workers: an issue of social inequality

A. Navarro a, b, *, C. Llorens a, c, d, S. Salas-Nicás a, S. Moncada c

a Research Group on Psychosocial Risks, Organization of Work and Health (POWAH), Autonomous University of Barcelona (UAB), Cerdanyola Del Vallès, Spain
b Biostatistics Unit, Faculty of Medicine, Autonomous University of Barcelona (UAB), Cerdanyola Del Vallès, Spain
c Union Institute of Work, Environment and Health (ISTAS), Reference Centre on Work Organisation and Health, Barcelona, Spain
d Sociology Department, Faculty of Sociology and Political Sciences, Autonomous University of Barcelona (UAB), Cerdanyola Del Vallès, Spain

Article history:
Received 12 April 2021
Received in revised form 11 June 2021
Accepted 22 June 2021
Available online 5 July 2021

Keywords:
COVID-19
SARS-CoV-2
Work
Inequalities
Spain

Abstract

Objectives: To describe the characteristics of the workers of activity sectors other than sanitary and socio-sanitary, who go to work with COVID-19 symptoms (GWC19S) during the lockdown or first phase of the lockdown de-escalation in Spain.

Study design: An observational cross-sectional study based on a convenience sample selected from the COTS online survey.

Methods: A cross-sectional study based on a sample of n = 9601 workers. Descriptive analyses were performed calculating GWC19S prevalences and fitting robust Poisson regressions to obtain crude and adjusted prevalence ratios.

Results: The overall GWC19S prevalence is 5.6%, greater in young people (8.7%), manual workers (8.7%), workers with low salaries (9.5%), and workers of essential sectors (7.4%). Among those workers who went to work regularly to their workplaces, the GWC19S prevalence is 10.0%, greater in young (15.1%), workers with low salaries (14.2%), and women (13.2%).

Conclusions: The axes of inequality of the labor market are clearly represented in the GWC19S phenomenon.

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Introduction

Social determinants of health have greatly influenced the effects of the COVID-19 pandemic.1 We may consider the inequalities in infection and mortality rates due to COVID-19 as one result of the social inequalities and of previously existing determinants.2 Among the social determinants of health, those related to work environment have an important role in this pandemic, since occupation is likely to be a direct determinant of infection and an indirect determinant of disease severity and mortality, through the relationship between occupational social class and comorbidities.3

Considering that the vast majority of people with symptoms would have chosen to stay at home if this were a feasible option in their actual employment situation, we must interpret going to work with COVID-19 symptoms (GWC19S) as a revealing phenomenon in itself. However, to our knowledge, there is no published literature about this. Furthermore, from the occupational health perspective, the effects of the COVID-19 pandemic have been the subject of an important number of papers, especially regarding the effects on health and care professionals. Less attention, nonetheless, has been paid to examine the situation in other activity sectors.

The aim of this paper is thus to describe the characteristics of the workers of activity sectors other than sanitary and socio-sanitary, who went to work during the lockdown or first phase of the lockdown de-escalation in Spain, with particular attention on the axes of labor market segmentation.

Methods

An observational cross-sectional study was carried out based on a convenience sample selected from the COTS online survey,4,5 conducted among workers resident in Spain between 29/04/2020 and 28/05/2020. The following inclusion criteria were established:
a) salaried workers who filled the questionnaire during the lock-down or first phase of de-escalation; b) working at the time of answering; and c) workers of a sector of activity other than sanitary or socio-sanitary. The definitive sample size was \( n = 9601 \) workers.

Based on the COVID-19 symptoms accepted at the start of the pandemic, the outcome “going to work with COVID-19 symptoms” was operationalized by the question “Since the state of alert was declared, have you gone to work with symptoms (fever, cough, shortness of breath or general malaise)?”. Independent variables were gender, age, occupational class (obtained using the 2011 National Classification of Occupations (CNO11), which is based on the International Standard Classification of Occupations (ISCO88)), employment contract, essential sector, and salary (How often does your current salary cover the daily basic needs of your home?). Descriptive analyses were performed calculating GWC19S prevalences and fitting robust Poisson regressions to obtain crude and adjusted prevalence ratios.

**Results**

The overall GWC19S prevalence is 5.6%, greater in young people—aged between 16 and 34 years old—(adjusted prevalence ratio, aPR = 1.85), manual workers (aPR = 1.64), workers with low salaries (aPR = 1.67), and workers of essential sectors (aPR = 2.38) or not knowing if they work in one of them (aPR = 2.37), Table 1. No substantial difference is found between women and men (5.8% vs 5.4%).

When asked, \( n = 3331 \) workers (34.7% of the total) stated that working in person was their most common situation since the state of alert was implemented. For these workers, the GWC19S prevalence is 10.0%. As is seen in Table 1, the most prevalent groups are manual workers (5.8%) and people with a salary that does not cover the daily basic needs of their homes (14.2%). Among those who regularly attended their jobs in person, we observed the same pattern as in all workers, except for two changes: there were not remarkable differences between manual and non-manual workers (aPR = 1.04) and women showed greater prevalence than men (aPR = 1.62). Temporary workers show lesser GWC19S prevalence than permanent ones (aPR = 0.77).

**Discussion**

A clear difference in the overall GWC19S prevalence between manual and non-manual workers is observed, but it disappears when the analysis is restricted among those who went to their workplaces and the rest of variables are considered. The explanation could be that the overall GWC19S prevalence is greater in manual workers because they attended their workplace physically much more often than non-manual workers.

In contrast, gender behaves in an opposite manner: the overall prevalences of men and women are similar, but when we exclusively study those who went to their workplaces, we observe that it was more common in men, but the GWC19S prevalence was greater in women. The overall prevalences in this case could be hiding a double inequality. On the one hand, in addition to the fact that there are more manual workers among men (with fewer possibilities to telework) than among women, among non-manual workers, men go to the employers’ premises more than women (31.3% vs 16.3%, data not shown), perhaps partly for not taking the joint responsibility for care and household work; on the other hand, the higher GWC19S prevalence in women among those who went to the workplaces is possibly due to the horizontal sexual segregation of jobs.

The high GWC19S prevalence in young workers could be partially explained because they are more likely to lose their employment\(^{5,6}\) and have lower levels of social protection. The social benefits that young workers are allowed to claim are limited since unemployment benefits in Spain depend on how long they contributed to the social security and the amount of their contributions (both can be expected to be lower than older workers).

Not surprisingly, in workers with low salaries, which do not cover the daily basic needs of their homes, GWC19S are more frequent than in workers with sufficient salaries. These results are consistent with those obtained on working while being sick in

### Table 1

Sample characteristics, prevalences and prevalence ratios of going to work with COVID-19 symptoms.

| Gender          | All non-sanitary or socio-sanitary workers | Working regularly at the workplace |
|-----------------|-------------------------------------------|----------------------------------|
|                 | n (%) Prevalence | Prevalence ratio | n (%) Prevalence | Prevalence ratio |
|                 | Crude Adjusted\(^a\) | Crude Adjusted\(^a\) | Crude Adjusted\(^a\) | Crude Adjusted\(^a\) |
| Gender          |                             |                             |                             |                             |
| Male            | 4553 (47.5) 5.4 1 1 | 2042 (61.4) 8.1 1 1 |                             |                             |
| Female          | 5024 (52.5) 5.8 1.08 (0.91–1.27) 1.18 (0.99–1.41) | 1285 (38.6) 13.2 1 1 | 1432 (43.0) 8.3 1 1 |                             |
| Age             |                             |                             |                             |                             |
| 16–34           | 774 (8.1) 8.7 | 1.93 (1.47–2.52) 1.85 (1.41–2.43) | 285 (8.6) 15.1 1 | 1.82 (1.31–2.53) 1.76 (1.26–2.45) |
| 35–49           | 4364 (45.5) 6.2 | 1.39 (1.16–1.66) 1.32 (1.10–1.58) | 1613 (48.4) 10.8 1 | 1.30 (1.04–1.63) 1.32 (1.04–1.66) |
| > 50            | 4455 (46.4) 4.5 | | 1432 (43.0) 8.3 1 1 |                             |
| Occupational class |                             |                             |                             |                             |
| No manual       | 6306 (67.8) 4.1 1 1 | 1075 (33.5) 8.8 1 1 |                             |                             |
| Manual          | 2998 (32.2) 8.7 | 2.15 (1.82–2.54) 1.64 (1.37–1.97) | 2133 (66.5) 10.5 | 1.20 (0.95–1.51) 1.04 (0.83–1.31) |
| Contract        |                             |                             |                             |                             |
| Permanent       | 7985 (83.9) 5.7 | | 2836 (85.6) 10.2 1 |                             |
| Temporary\(^b\) | 1537 (16.1) 5.1 | 0.89 (0.70–1.12) 0.79 (0.62–1.01) | 476 (14.4) 9.5 | 0.93 (0.69–1.26) 0.77 (0.56–1.04) |
| Salary\(^c\)    | 7276 (76.4) 4.4 | 1 | 2227 (67.4) 8 1 | |                             |
| Insufficient    | 2245 (23.6) 9.5 | 2.14 (1.81–2.53) 1.67 (1.39–2.01) | 1078 (32.5) 14.2 | 1.76 (1.44–2.16) 1.57 (1.26–1.95) |
| Essential sector|                             |                             |                             |                             |
| No              | 3668 (38.5) 2.9 | 1 1 | 618 (18.7) 5.5 1 1 |                             |
| Yes             | 5518 (58.0) 7.4 | 2.61 (2.11–3.22) 2.38 (1.90–2.98) | 2621 (79.4) 11.1 | 2.01 (1.42–2.83) 2.09 (1.44–3.03) |
| Don’t know      | 332 (3.5) 6.5 | 2.27 (1.44–3.57) 2.37 (1.48–3.77) | 63 (1.9) 12.7 | 2.30 (1.11–4.74) 2.74 (1.31–5.74) |

\(^a\) Adjusted by the rest of variables.

\(^b\) Permanent: includes civil servants, contract with no term defined, and permanent seasonal contracts. Temporary: includes contracts for specific projects, interim contracts, and all types of fixed-term contracts.

\(^c\) How often does your current salary cover the daily basic needs of your home? Sufficient is “Always” or “Many times” and Insufficient is “Sometimes” or “Only once” or “Never”.
Spain, unlike other countries, where the economic reason is one of the most reported.7

It is hard to explain that temporary workers have a lower GWC19S prevalence than permanent workers. Perhaps aspects related to recognition or sense of community at work could be playing a role in this finding. A more detailed study is necessary to obtain sound explanations.

A possible explanation of the high prevalence among workers in essential sectors could be a great commitment due to their fundamental role for society in a very hard time, which could also be one of the reasons why in care professionals the GWC19S prevalence is higher than 20%.4

This study has certain limitations, mainly related to the recruitment of the participants through an online survey. First, sample representativeness cannot be ensured, but it is important to keep in mind that our purpose in this paper is not to obtain population estimates, but to describe GWCS19 prevalences among groups. Furthermore, the distributions obtained in the overall sample do not substantially differ from the population ones in terms of occupation and type of contract, while it is true that we find a little more women and fewer young people.4,5 Second, we cannot dismiss the existence of selection bias; however, we carried out sensitivity analyses in the overall sample without finding any evidence of its existence.5 We also want to highlight that several of the results obtained in the overall sample are consistent with those published by other sources.5 Third, we do not know the studied participants’ migrant conditions. Migrant workers have been identified as a vulnerable group in the COVID-19 context,8 and they are surely highly exposed to GWC19S. Finally, the self-reporting of the GWC19S could lead to an underestimation of its prevalence. However, self-administration has long been shown to be advantageous in terms of reducing effects related to the interviewer presence, such as social desirability biases.9

In summary, unprecedented results about GWC19S are presented, showing that its intensity varies according to the segmentation axes of the labor market, reinforcing the evidence to support that the COVID-19 pandemic has exacerbated inequalities under working conditions and consequently in workers’ health.10

Author statements

Ethical approval

All procedures of this study were approved by the Ethics Committee on Animal and Human Experimentation of the Autonomous University of Barcelona (CEEAH/5158).

Funding

None declared.

Competing interests

None declared.

References

1. Burstrom B, Tao W. Social determinants of health and inequalities in COVID-19. Eur J Publ Health 2020;30(4):517—8.
2. Bambra C, Riordan R, Ford J, Matthews F. The COVID-19 pandemic and health inequalities. J Epidemiol Commun Health 2020;74(11):694—8.
3. Khalatbari-Soltani S, Cumming RC, Delpierre C, Kelly-Irving M. Importance of collecting data on socioeconomic determinants from the early stage of the COVID-19 outbreak onwards. J Epidemiol Commun Health 2020;74(8):620—3.
4. Salas-Nicás S, Llorens Serrano C, Navarro Giné A, Moncada Lluís S. Condiciones de trabajo, inseguridad y salud en el contexto del COVID-19: estudio de la población asalariada de la encuesta COTS. Barcelona: UAB, ISTAS-CCOO; 2020.
5. Salas-Nicás S, Moncada S, Llorens C, Navarro A. Working conditions and health in Spain during the COVID-19 pandemic: minding the gap. Saf Sci 2021;134(2):105064.
6. Eurofound. Living, working and COVID-19. Luxembourg: Publications Office of the European Union; 2020.
7. Navarro A, Salas-Nicás S, Moncada S, Llorens C, Molinero-Ruiz E. Prevalence, associated factors and reasons for sickness presenteeism: a cross-sectional nationally representative study of salaried workers in Spain. BMJ Open 2016;8:e021212. 2018.
8. Koh D. Migrant workers and COVID-19. Occup Environ Med 2020;77(9):634—6.
9. Couper M. Web Survey Methodology: interface design, sampling and statistical inference. Bilbao: Euskal Estatistika Euskunde; 2011.
10. van Dorn A, Cooney RE, Sabin ML. COVID-19 exacerbating inequalities in the US. Lancet 2020;395(10232):1243—4.