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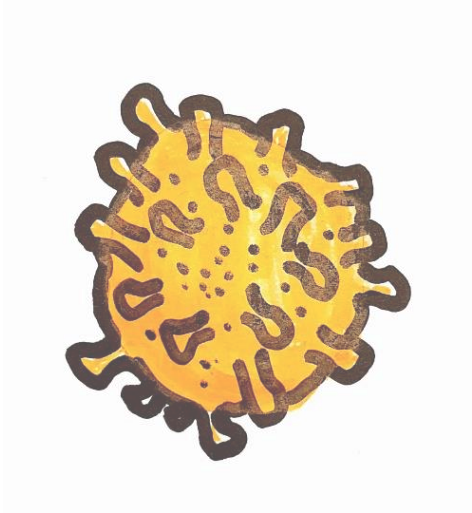

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Madrid during the COVID19 lockdown: a pilot study on lifestyle, wellbeing and telework

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ABSTRACT

This paper is based on the Madrid Lifestyle Survey during the COVID19, a pilot online study carried out at the *Universidad Politécnica de Madrid*. Such pilot study collected its first data since the week after the declaration of the State of Emergency in Spain, until the week before such measure was revoked. The survey consisted in two parts, one focused on socio-demographic and wellbeing data collection and the other focused on time use survey and both the use of electronic devices and internet. We shed some useful evidence on what actually happened in the Madrid households, illustrating the fact of daily activities specially focused on telework, watch TV/video, food related activities and supervising children, and with a negligible part of physical activities. Overall daily satisfaction is in line with latest estimates from the World Happiness Report for Spain, although anxiety levels seem to have been higher for women. Almost half of reported activities involved the use of electronic devices and/or internet. Based on these results and the proportion of daily telework activities, we suggest that -in the context of the new regulation under current debate in Spain concerning telework- a good compensating measure for teleworkers by employers would be to cover 43-50% of costs, per teleworked day, in internet/phone bills, electricity, heating and maybe other equipment non provided by employers.

INTRODUCTION

Madrid has sadly been the epicentre of the COVID19 impact in Europe during the 2020 spring term. The Madrid area was the first in Spain in closing schools and universities, three days before Spain declared the State of Emergency starting on March 14 -which lasted 98 days, until June 20, included (Boletín Oficial del Estado, 2020). The severe restrictions suffered both in Madrid, particularly -and in Spain in general-, have changed Spanish lifestyle and habits. People have been confined in their households longer than in any other part of Spain and ranked on the top of main European cities in this regard. Thus, any study shedding some light of what have happened during this period inside households is of interest for social scientists in general. The 'Decision Analysis and Statistics Group' at the *Universidad Politécnica de Madrid* first launched a Lifestyle Survey days after the beginning of the COVID19 lockdown, as part of the 'Economics @Intelligence' initiative. This pilot study is still open, however this paper use data obtained strictly under the presence of some official restrictive measures in Madrid, which vanished with the end of the State of Emergency in Spain.

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The aim of the study was to capture relevant data on lifestyle, subjective wellbeing, anxiety and the use of internet and electronic devices just during the confinement period. In order to achieve the most satisfactory results, we developed an online web-app to capture responses in real time. This pilot study in Madrid tries to align with the novel and suggested socio-economic policy measures in (Frijters, Clark, Krekel, & Layard, 2020), where wellbeing as a central aspect for the goals of any government is explored.

METHODOLOGY

We need to specify the methodology in two difference aspects: the survey design and the development of the online tool. Given the obvious difficulties for standard data collection, we were forced to design a survey adapted to an online tool which could optimize the combination of response rates and quality of such responses.

Survey Design

The survey is the result of the combination and adaptation of the methodologies employed by (i) (Fisher, Gershuny, Altintas, & Gauthier, 2016) in the Multinational Time Use Study (MTUS) for the time use part of the survey, (ii) the methodology for the Wellbeing modules used by the UK Office for National Statistics (Office for National Statistics, 2018), and (iii) the American Time Use Survey by the (Bureau of Labor Statistics and US Census Bureau, 2005) for the combination of wellbeing modules and time use survey.

In particular, the spectrum of activities is the same as in (Fisher, Gershuny, Altintas, & Gauthier, 2016). Thus, we divide all possible human activities in a list of 69 coded categories (see table 1). The time use methodology follows the episodes approach based on diaries, which divide each respondent's day in episodes accordingly with the number of primary activities performed during the day.

The respondents were able to select a primary and secondary activities; whereas each respondent must select one primary activity by default, the online tool allowed for multiple selections of secondary activities, in order to capture multitasking. In addition, there were two checkboxes in case that for each episode of the day the respondent were either online, or using some electronic device -or both. After filling in one episode completely, the respondents were able to add as many more episodes as needed to complete the picture of their day.

Last, some additional and standard sociodemographic questions were asked, concerning age group, gender, region , and both the overall daily subjective and the anxiety level (in a 0-10 scale, respectively), together with the concrete date of the diary they refer to.

Development of the Online Tool

The web-app has been developed in R language (R Core Team, 2014), using the following packages: shiny, shinyalert, dplyr, shinyTime, and googledrive. The interface is a standard adaptation of features offered by R Shiny, and the online exit is powered by shinyapps.io by RStudio. Anonymity was complete, as no personal or contact info was either requested or tracked by any means (see https://economicsintelligence.shinyapps.io/Spain-COVID19-lifestyle-survey/).

Data were directly submitted from shinyapps to the cloud -where everything was daily stored and backed up-, and all data were available in real time through the connection between shinyapps and google drive. All data were saved in a .csv format.

The web-app initially displays some interactive menus where standard sociodemographic information must be filled in in order to get to the "diary completion". Such sociodemographic characteristics

comprises the following information: date of the diary to be submitted (not necessarily the date in which the diary is filled in and submitted), age group, gender, location, subjective wellbeing, and anxiety level.

The most innovative feature from the development of such a time use data collection method has to do with the interactive and fluid display of episodes, sequentially, on demand as respondents wish to introduce a new episode in the reported diary. First episode appears to be filled in once previous sociodemographic questions are completed; then, any respondent may introduce the start time and end time for that first episode, together with the primary activity and other activities -displayed in an interactive menu with both a search box and a scroll-down menu with codes in table 1-, and the two checks for the use of internet and the use of electronic devices, respectively.

Each new episode automatically appears on demand so that automatically the start time is set by previous episode's end time, and any respondent just have to introduce end time, activity/ies carried out, and the two checks. Once the respondent has completed each and every episode, the diary is completed and submitted whenever the respondent clicks the "end and submit" button.

Table 1
List of coded activities used for the Madrid Lifestyle Survey during the COVID19 Lockdown. Source: (Fisher, Gershuny, Altintas, & Gauthier, 2016)[2]

1 cuidado personal o de hogar imputado

10 trabajo no remunerado para generar ingreso al hogar

11 viaje como parte del trabajo remunerado

12 recesos laborales

13 otras actividades en el lugar de trabajo

14 búsqueda de trabajo

15 educación (en establecimientos educativos)

16 hacer la tarea, estudiar

17 ocio y otras formas de instrucción o entrenamiento

18 preparación de comidas, cocinar

19 poner la mesa, lavar los platos

2 dormir y siestas

20 limpiar

21 lavado de ropa, planchado, reparación de ropa

22 mantener hogar/vehículo, incluyendo cargar nafta/repostar

23 otro trabajo doméstico no remunerado

24 compra de bienes

25 consumo de servicios de cuidado personal

26 consumo de otros servicios

27 cuidado de mascotas (no sacar a pasear al perro)

28 cuidado físico y médico los/as hijos/as

29 enseñar, ayudar con la tarea

3 dormir y siestas, imputado

30 leerle, hablar o jugar con el/la hijo/a

31 supervisar, acompañar u otros cuidados al/a la hijo/a

32 cuidado de adultos

33 voluntariado, actividades cívicas en instituciones

34 oración y religión

35 ocio general fuera del hogar

36 asistir a un evento deportivo

37 asistir al cine, teatro, opera, concierto

38 otros eventos públicos

39 asistir a restaurantes, café, bar, pub

4 cuidado personal

40 fiestas, eventos sociales, casino

41 tiempo imputado fuera del hogar

42 realizar deportes en general o ejercicio

43 caminar

44 bicicleta

45 otra recreación al aire libre

46 jardinería

47 pasear al perro

48 recibir o visitar amigos

49 conversar (en persona o por teléfono)

[2] For an English version of this list, please see table 3.1,pg 42-44, in (Fisher, Gershuny, Altintas, & Gauthier, 2016)

5 comidas en el trabajo/escuela

50 jugar (sociales & solitarios)/otros, dentro del hogar

51 ocio general dentro de un local

52 arte o música

53 escribir correspondencia (no correo electrónico)

54 tejer, realizar artesanías o pasatiempos

55 leer

55 relajarse, pensar, no hacer nada

57 escuchar música u otro contenido de audio

58 escuchar radio

59 ver tv, video, dvd

6 comidas o snacks en otros lugares

60 jugar en la computadora

61 correo electrónico, ver internet, computación

62 sin actividad, hay modo de transporte, transporte imputado

63 viajar al/del trabajo

64 viaje al/del establecimiento educativo

65 viaje voluntariado/cívico/religioso

66 viaje asociado al cuidado de hijos/as o adultos

67 viaje de compras o cuidado personal/hogar

68 otro viaje

69 sin actividad registrada

7 trabajo remunerado - principal (fuera de hogar)

8 trabajo remunerado en el hogar

9 segundo u otro trabajo remunerado fuera del hogar

RESULTS AND DISCUSSION

Data collection resulted in a dataset with 3444 point observations during the COVID19 lockdown in Madrid and until the complete restore of the new normal; only 58 are missing values, which means only a 1.69% of missing values and, thus, a successful completion rate of 98.31%. We are minded of the reduced size of the sample, which corresponds to a surveyed sample to population ratio of 1 to 100.000 inhabitants in the whole Madrid area (*Comunidad de Madrid*), not just the city of Madrid. However this fact has some obvious limitations, data quality is high; moreover, this study yields -to the best of our knowledge- the only collected information specifically on these topics in Madrid during this exceptional period. Thus, high data quality partially compensates in some degree the data shortage concerning sample size of this online pilot study, and provide some useful and unique evidence on the matter.

A descriptive analysis of de dataset is summarized in the subsequent set of four figures and four tables. Collected data overwhelmingly corresponds to 30-65 year old adults -about 82% of all responses; see Figure 1.

Figure 1
Responses by age group, Madrid Lifestyle Survey during the COVID19 Lockdown

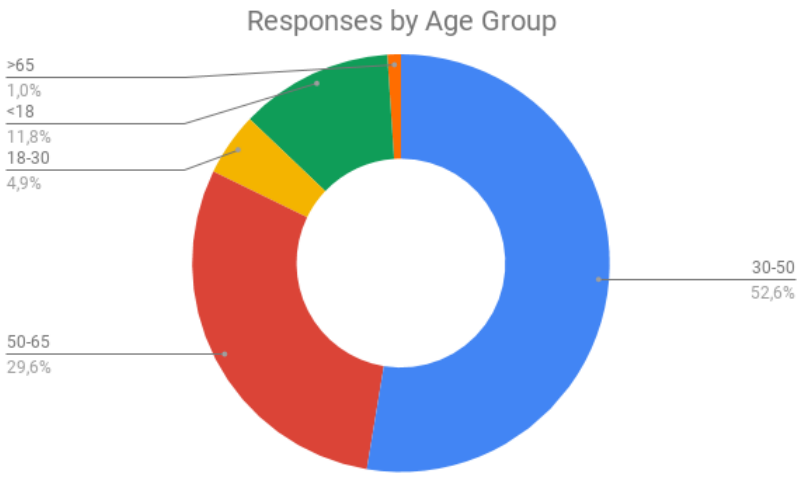
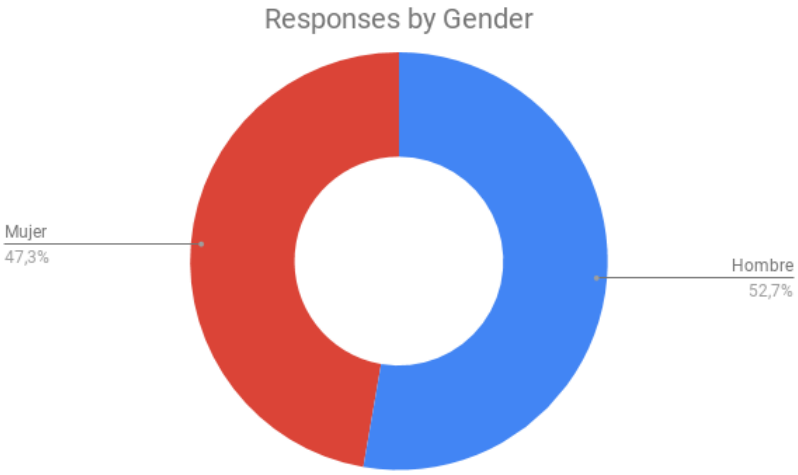


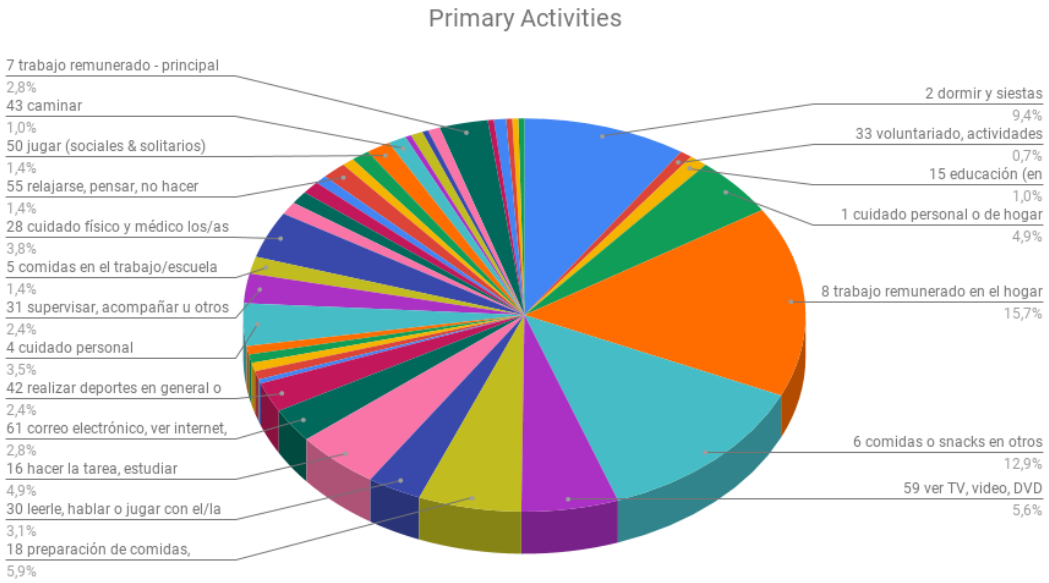
Figure 2 shows the responses by gender, which are slightly unbalanced to men, who represent about a 53% of responses, while women represent 47% of them. A closer view on the whole dataset shows that women tend to report fewer episodes than men. Just these two isolated facts may already suggest some evidence of women struggling more than men, surely due to either time scarcity, more multitasking, or both -which might be the cause of fewer responses and with a lower number of episodes per female diary; moreover, as we will comment later, this may also be interpreted as a prelude of women reporting lower satisfaction and higher anxiety levels during the lockdown (see tables 2, 3 and 4, commented below).

Figure 2
Responses by gender, Madrid Lifestyle Survey during the COVID19 Lockdown



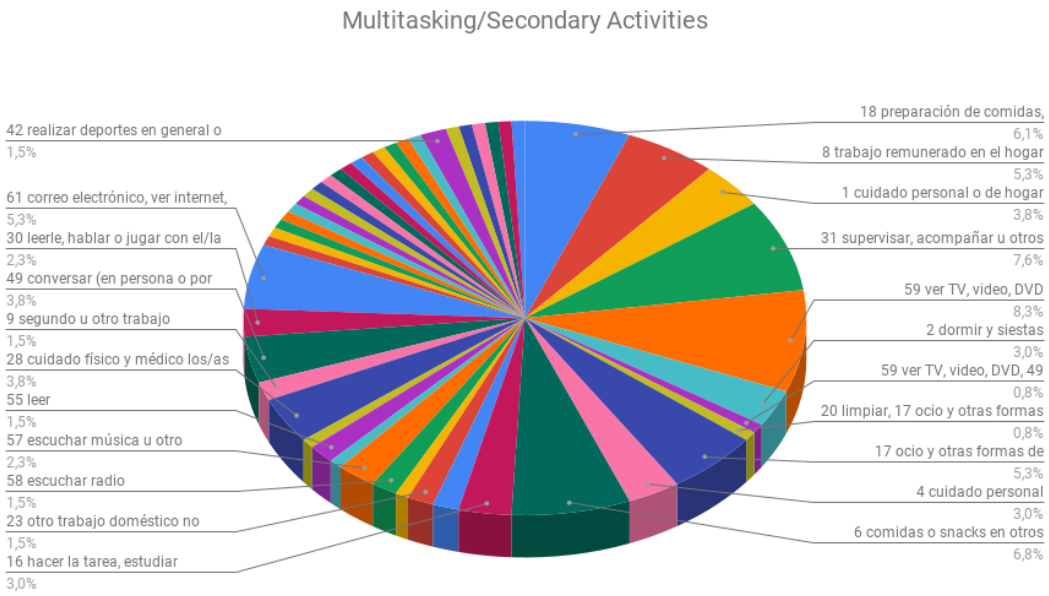
Time use part of the survey releases the following picture of daily primary activities performed by an average individual confined in Madrid during the COVID19 lockdown; figure 3 illustrates by means of a circular graph the following highlights: more than the half of reported activities comprises paid work at home, emailing and internet use, eating at home, food preparation, personal or household care, watch TV/video, or sleeping. It is also remarkable the negligible percentage of primary activities which involve any kind of physical activity. Last, it is worth noting that among the 69 different coded activities, respondents used 40 different codes in their responses for primary activities.

Figure 3
Reported results in collected diaries for primary activities, Madrid Lifestyle Survey during the COVID19 Lockdown



Multitasking is captured by responses in the section for secondary activities for each episode in any reported diary. Interestingly, among the 69 coded activities, respondents used 48 codes in the list - more than those used in the primary activities' selection. It is also worth noting that 50.32% of all reported episodes included multitasking, as they reported at least one secondary activity. Concerning actual performance, the pie is more split among the different reported activities; we must highlight the most performed secondary activities ranked as follows: watch TV/video, supervise children or alike, eating, food preparation, work at home, emails and use of internet, and leisure.

Figure 4
Reported results in collected diaries for multitasking/secondary activities, Madrid Lifestyle Survey during the COVID19 Lockdown



Overall wellbeing results in this pilot study are summarised in table 2, where all responses for both men and women of all ages are included. These overall results show main measures of centrality and dispersion for the reported levels of daily satisfaction and anxiety during the lockdown. Subjective wellbeing is on average very similar to last official data for Spain in the 2020 World Happiness Report -whose point value is 6.40, see (Helliwell, 2020). We cannot say nor believe there is a statistically significant difference with our value for subjective wellbeing, despite the 0.5 difference in the results. Anxiety levels are highly dispersed, and although mean value is slightly less than 5, mode is 7. High dispersion, particularly in anxiety levels, makes us wonder about gender differences in these same measures.

Table 2
Reported results on satisfaction with each reported day and the level of anxiety in that day for all respondents (all ages), Madrid Lifestyle Survey during the COVID19 Lockdown

Total (0-10 scale)	Subjective Wellbeing	Anxiety level
Mean	6,90	4,62
Median	7,00	5,00
Mode	7,00	7,00
St.Dev	2,03	2,82
St.Dev/Mean	29,43%	61,07%

Tables 3 and 4 show the measures of centrality for all men and all women, separately. These descriptive results clearly show more evidence supporting the following facts: women in Madrid have been slightly more dissatisfied with their confined days, and, overall, women have suffered more self-reported anxiety than men. In particular, mean level of anxiety is about 50% higher for women with respect to men, and dispersion in self-reported anxiety is much lower for women than for men -both in absolute terms by the standard deviation and in relative terms by the standard deviation to mean ratio.

Table 3
Reported results on satisfaction with each reported day and the level of anxiety in that day for men (all ages), Madrid Lifestyle Survey during the COVID19 Lockdown

Men (0-10 scale)	Subjective Wellbeing	Anxiety level
Mean	7,12	3,74
Median	8,00	3,00
Mode	8,00	2,00
St.Dev	2,42	2,99
St.Dev/Mean	34,04%	80,06%

Table 4
Reported results on satisfaction with each reported day and the level of anxiety in that day for women (all ages), Madrid Lifestyle Survey during the COVID19 Lockdown

Women (0-10 scale)	Subjective Wellbeing	Anxiety level
Mean	6,76	5,44
Median	7,00	6,00
Mode	7,00	7,00
St.Dev	1,57	2,35
St.Dev/Mean	23,21%	43,26%

Last, but not the least, we must highlight one of the main goals of this pilot study, which revolves around the use of electronic devices and the use of internet. Concerning the former, we observe from the data that 46% of total reported activities were carried out while using some kind of electronic device. Similarly, we observe that 40% of total reported activities have been performed making use of an internet connection. We do not observe many things to highlight regarding gender differences on this matter.

Table 5
Reported results on the use of electronic devices and the use of internet, Madrid Lifestyle Survey during the COVID19 Lockdown

Using an Electronic Device	Using an internet connection (online)
46%	40%

There is an important and ongoing unprecedented economic regulation under debate right now in Spain regarding teleworking (Ministerio de Trabajo y Economía Social del Gobierno de España, 2020), which intends to regulate some compensations for workers in teleworking mode -who use their personal and household resources.

The context of this study presents a unique situation in social sciences to isolate all disturbing factors when analysing telework and some compensating measures for workers by their employers. Teleworking implies several costs and benefits for both workers and employers, which in normal conditions are very difficult to analyse quantitatively. Normally, just the commuting costs for workers in time and money can be decently estimated, as well as imputed cost per working place for employers. However, the absence of teleworking regulation may be a risk for workers -and opportunity for some employers; workers may receive some economic burden in terms of costs of basic tools otherwise provided by employers, such as internet and other physical and technological capital, and such burden may overpass the benefits in terms of time, effort and money saved in commuting.

We estimate, based on this pilot study and its results, that in case of teleworking, a policy measure that might be adopted is to compensate with around 43%-50% of the daily cost of internet in the household/mobile internet fare, and a similar percentage in the needed equipment provided by workers and used for employers tasks; the equipment may vary, as there are many different types of works that may be carried out in teleworking conditions. However, in case of home teleworking, a similar range of 43%-50% of daily costs in electricity and heating bills will clearly apply, per day of home teleworking.

The rationale for this 43%-50% minimum range of compensation in daily costs of (home) teleworking, for previously mentioned bills -by employers to workers- comes from the following fact: around 20% of daily activities in full confinement are related to paid work, while 46% of performed activities in the household in full confinement make use of some electronic device, and 40% of them make use of internet. Thus, the weight of work activities by use of internet is around 50% (=20%/40%), and the weight of work activities among the activities involving some use of electronic device is around 43% (=20%/46%). Based on our available data, we suggest this interval as a minimum level of compensation for daily costs of (home) teleworking.

CONCLUSION

The Madrid Lifestyle Survey during the COVID19 provide some interesting and useful evidence on what happened inside the households in this very special historical period. Moreover, results described here may inspire some policy measures, as the one suggested here concerning (home) telework.

This pilot study show that main primary activities carried out by people confined in Madrid during the COVID19 lockdown were related to teleworking, preparing food and eating, watching TV/video and personal and household care -as well as sleeping. Multitasking took place in half of the daily activities performed -with watch TV/video and supervising children as the main secondary activities carried out.

The use of internet and the use of electronic devices was remarkable. Among all reported activities 40% of them were carried out using internet connection, and 46% using an electronic device. Based on the combination of these results just summarised in this and last paragraphs, we find some evidence to provide an estimation for economic policy; in particular, we focus on the novel and unprecedented ongoing regulation for telework in Spain, which is needed of some estimates based on Spanish evidence. The context of the COVID19 lockdown in Madrid offers an opportunity in this matter, and we estimate that employers should compensate teleworkers by paying around 43%-50% of each daily cost of some bills, namely the internet/phone, electricity, heating, and maybe other equipment if not provided by employers.

Results on wellbeing are in line with the latest World Happiness Reports for Spain, however we find some evidence suggesting that the level of self-reported anxiety was higher for women than for men -about 50% more anxiety levels- during the COVID19 lockdown in Madrid.

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