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Comorbidities of Primary Care patients with COVID-19 during the first wave of the SARS-CoV-2 pandemic in the Community of Madrid

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ABSTRACT

Objectives. Recent publications on inpatients with COVID-19 describing their comorbidities and demographic profile exists, but data from large populations requiring only primary care (PC) are scarce. This paper aims to fill this gap and report the prevalence of eight comorbidities (high blood pressure, diabetes mellitus, cancer, cardiovascular disease, asthma, chronic kidney disease, chronic obstructive pulmonary disease, and chronic heart failure) among patients attending PC during the onset of the SARS-CoV-2 pandemic in the Community of Madrid (CoM), Spain.

Patients and methods. This is an observational retrospective study that collects data registered in the CoM between February 25th and May 31st, 2020. Data are divided in two groups: Group-1 (N=339,890) consist of all patients with suspected or proven SARS-CoV-2 infection; and Group-2 is the subgroup (N=48,556, 14.3% of Group-1) of individuals with COVID-19 confirmed by positive RT-PCR test.

Results. Comparing Group-1 with Group-2, 339,890/48,556 patients, respectively, the main results were as follows: average age (60.9/69.9 years), presence of at least one comorbidity (33.51%/47.69%), high blood pressure (19.74%/32.74%), diabetes mellitus (7.13%/13.75%), cancer (6.56%/10.6%), cardiovascular disease (4.52%/9.26%), asthma (7.98%/6.56%), chronic kidney disease (1.84%/4.41%), chronic obstructive pulmonary disease (2%/4.03%), and chronic heart failure (1.14%/2.77%). High blood pressure and diabetes mellitus were seen to be the most frequent (6.56%/8.38%) association.

Conclusions. Patients requiring PC attention during the first wave of the COVID-19 pandemic in the CoM presented with a very high rate of comorbidities, with marked differences among those with or without a confirmed SARS-CoV-2 infection.

Keywords: Comorbidities, COVID-19, Primary Care

Comorbilidades de los pacientes con COVID-19 atendidos en Atención Primaria durante la primera oleada de la pandemia de SARS-CoV-2 en la Comunidad de Madrid

RESUMEN

Objetivos. Existen publicaciones sobre las comorbilidades y el perfil demográfico en pacientes hospitalizados por COVID-19, pero son escasas aquellas sobre grandes poblaciones atendidas en Atención Primaria (AP). El objetivo de este trabajo es llenar este vacío describiendo la prevalencia de ocho comorbilidades (hipertensión arterial, diabetes mellitus, cáncer, enfermedad cardiovascular, asma, enfermedad renal crónica, enfermedad pulmonar obstructiva crónica e insuficiencia cardíaca crónica) en los pacientes de AP durante el inicio de la pandemia por SARS-CoV-2 en la Comunidad de Madrid (CoM), España.

Pacientes y métodos. Estudio observacional retrospectivo que recopila datos registrados en la CoM, entre el 25 de febrero y el 31 de mayo de 2020. Se diferencian dos cohortes de pacientes que acudieron a AP: Grupo-1 (N=339.890), que incluye todos los pacientes con sospecha de SARS-CoV-2 o infección confirmada; Grupo-2, que es el subgrupo (N= 48.556, 14,3% del Grupo-1) de casos confirmados de COVID-19 mediante prueba RT-PCR.

Resultados. Comparando el Grupo-1 con el Grupo-2 (339.890/48.556 pacientes, respectivamente), los principales resultados fueron los siguientes: edad media (60,9/69,9 años), presencia de al menos una comorbilidad (33,51%/47,69%),

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hipertensión arterial (19,74%/32,74%), diabetes mellitus (7,13%/13,75%), cáncer (6,56%/10,6%), enfermedad cardiovascular (4,52%/9,26%), asma (7,98%/6,56%), enfermedad renal crónica (1,84%/4,41%), EPOC (2%/4,03%) e insuficiencia cardíaca crónica (1,14%/2,77%). La asociación más frecuente fue hipertensión arterial y diabetes (6,56%/8,38%).

Conclusiones. Los pacientes atendidos en AP durante la primera ola de la actual pandemia de COVID-19 en la CoM presentaron una tasa muy alta de una o más comorbilidades comunes, con diferencias significativas según tuvieran una infección confirmada o no por SARS-CoV-2.

Palabras clave: Comorbilidades, COVID-19, Atención Primaria.

INTRODUCTION

During the first wave of SARS-CoV-2 pandemic, the Community of Madrid (CoM) was one of the most important epicentres of this disease, not only in Spain but also in the world. On March 31st, 2020, at the peak of the first pandemic wave, deaths per 100,000 inhabitants in the CoM were 57.7, tripling that of Spain (17.3), followed by Belgium (14.8), Italy (13.4), France (6.24), and UK (5.6). Accumulated deaths at the time in the CoM (3,865) represented 42.7% of those registered in Spain (9,053). Also, the CoM recorded a cumulative incidence of 363.22 cases per 100,000 inhabitants in the last 14 days, while Spain recorded 192.3, followed by Italy (122.2), Belgium (103), France (56.6) and UK (40) during the same period [1,2].

The comorbidities associated with patients with COVID-19 are well known, but have generally been obtained from patients with the most severe forms of the disease often requiring hospital admission [3-6].

This is a retrospective observational study based on the database of the CoM. It provides an opportunity to determine the comorbidity burden in the patients seen in Primary Care (PC) for COVID-19 during the first wave of the pandemic in this region.

PATIENTS AND METHODS

Ethics. The Clinical Research Ethics Committee of Hospital Clínico San Carlos, Madrid (Spain), approved the study (Comité Ético de Investigación Clínica; code: 21/197-E).

The CoM Public Health Service (*Servicio Madrileño de Salud,* SERMAS) has 430 PC centres and clinics in addition to its hospitals and other services that serve a population of 6.7 million inhabitants [7,8]. Since 2012, the medical records of all patients seen in the PC have been electronically captured in a centralized system of Electronic Health Record (HER) known as "AP-Madrid" (*Sistema de Información de Historia Clínica Electrónica Única Centralizada de Atención Primaria*).

Design. This is a retrospective observational study based on the information collected in "AP-Madrid" by the family doctors of the SERMAS between February 25th and May 31st, 2020. This study includes information on 339,890 patients with any of the following diagnoses (Figure 1): "infected" with SARS-CoV-2 (code A77.01 of International Classification of Primary Care Second edition, ICPC-2); or "suspected infection" (code A77 of ICPC-2). Two groups were analysed in the study; Group-1: all individuals (339,890) coded as A77.01 or A77; and Group-2: 48,556 individuals from Group-1 with a positive RT-PCR test (representing 14.3% of Group-1). During the first wave, some patients were assigned to codes A77.01 or A77 without an RT-PCR test due to a shortage of tests. Only 68,981 patients, representing 20% of the total in Group-1, underwent the test showing positive results 48,556 (= Group-2). When the two codes coexisted in the same patient, the following hierarchy prevailed: infected case>suspected case.

Setting. The data analysed in this paper were anonymous and obtained from the information provided by the PC management team of SERMAS periodically to the COVID-19 Control Centre (*Centro de Control COVID-19, CCC*). The authors of this paper had worked at the CCC during the first wave of the pandemic. It was created at the beginning of the COVID-19 pandemic emergency by the CoM Government [9]. The PC forwarded updated information to the CCC, causing some patients to have more than one diagnosis code related to COVID-19, as noted above.

The data captured in CCC were cleaned and analysed with the business intelligence software (specifically, Microsoft Power BI) and presented through interactive dashboards. The decision-making responsibility was not a part of the CCC's tasks.

Variables. The variables analysed included the age ranges, sex, and eight comorbidities: high blood pressure (HBP), diabetes mellitus (DM), cancer (diagnosed in the last 5 years), cardiovascular disease (CVD), asthma, chronic kidney disease (CKD), chronic obstructive pulmonary disease (COPD), and chronic heart failure (CHF).

Statistical analysis. Data are expressed as the mean (standard deviation) for continuous variables, and the absolute and relative frequencies for the categorical variables, as appropriate. Inferential analyses were performed using the McNemar test (Mn) for qualitative variables and the related measures t-test (T) for quantitative variables. All *p* values lower than 0.05 were deemed statistically significant. For comparisons showing statistical significance, the effect size was reported according to the nature of each variable. The Odds Ratio was reported for the qualitative variables and Cohen's D for the quantitative variables, together with their 95% confidence intervals. Statistical analyses were performed using the Statistical Package for the Social Sciences (IBM SPSS Statistics for Windows, Version 25.0. Armonk, NY: IBM Corp).

RESULTS

This observational study analysed a total of 339,890 patients (Group-1) who visited their family doctor for symptoms potentially related to the COVID-19. Figure 1 describes the breakdown of the patients assigned to each diagnostic category, detailing the subsample of patients that underwent an RT-

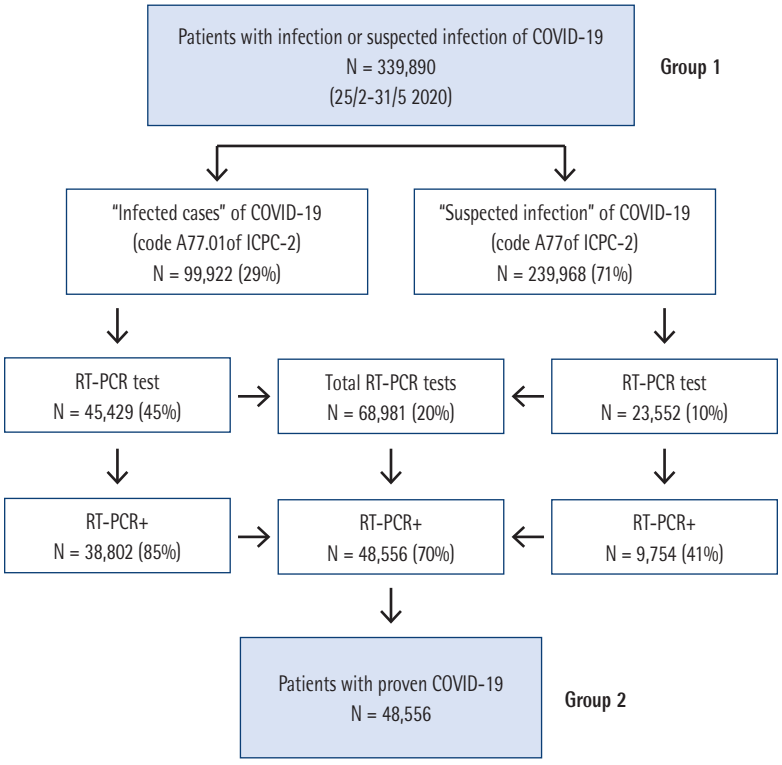

Figure 1 | **Patients with a code related to COVID-19 in the electronic medical record of Primary Care (AP-Madrid)**

All percentages (%) refer to the sample (N) that appears in the table immediately above. The two boxes with a grey background represent the two Groups in which this study analyses comorbidities, sex, and age. ICPC-2 = International Classification of Primary Care Second edition. RT-PCR= Reverse transcription polymerase chain reaction. RT-PCR+ = Positive test result.

PCR test, and those that had a positive result (Group-2, 48,556 individuals).

At least one of the eight comorbidities studied was observed in 33.51% of patients in Group-1 and 47.69% in Group-2 with a statistically significant difference (*Mn*=420.2; $p<0.001$). The patients with comorbidities in Group-2 (mean ± SD age= 69.95±15.72 years) were older than those in Group-1 (mean ± SD age= 60.90±18.61 years) with a significant difference (T=240; $p<0.001$; D'=0.52; D'95% [0.50 to 0.54]).

The mean ± SD age in Group-2 was 59.07±19.04 years, whereas in Group-1 47.97±19.5 years (T=119.8; $p<0.001$; D'=0.57; D' 95% [0.56 to 0.58]). There was a higher proportion of women in Group-1 (57.29%) than in Group-2 (53.19%) (Mn=290.9; $p<0.001$; OR 1.077; OR 95% [1.68 to 1.987]). In Groups 1 and 2, the mean ± SD age for men was 47.4±19.75 and 60.2±17.89 years, respectively; while the mean ± SD age for women was 48.39±19.29 and 58.06±19.94 years, respectively. Figure 2 shows the sex and age distribution of subjects included in the Groups 1 and 2.

Specifically, in Group-2 (proven COVID-19) the frequencies of the eight comorbidities (Table 1) were HBP (32.74%), DM (13.75%), cancer (10.60%), CVD (9.26%), asthma (6.56%), CKD (4.41%), COPD (4.03%), and CHF (2.77%). Generally, in Group-2, the relative frequencies of comorbidities were higher, particularly among men (where HBP, DM and cancer stand out).

Table 2 shows the absolute and relative frequencies of comorbidities, alone or in combination, if their occurrence is greater than 0.5%. In both groups, the highest frequency combination was HBP and DM. Finally, Table 3 lists the eight comorbidities (in absolute values) analysed for both groups in this study, stratified by sex (in relative values) and age ranges.

DISCUSSION

Our work demonstrates that a high frequency of patients with comorbidities in the population during the first wave of the COVID-19 pandemic sought care in the PC network of the CoM. Individuals with confirmed COVID-19 had a higher proportion of underlying diseases causing their high morbidity and mortality in the period investigated.

Figure 2 | **Relative frequency of the age range in Groups 1 and 2 stratified by sex.**

Table 1 | **Prevalence of comorbidities globally and stratified by sex in Groups 1 and 2.**

	Group-1; N (%)			Group-2; N (%)			General population (CoM) % [23]		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
Cohort	339,890	145,183 (42.71)	194,707 (57.28)	48,556	22,731 (46.81)	25,825 (53,18)			
HBP	67,084 (19.74)	30,751 (21.18)	36,333 (18.66)	15,899 (32.74)	8,080 (35.55)	7,819 (30.28)	19.08	19.87	18.57
Asthma	27,107 (7.98)	9,645 (6.64)	17,462 (8.97)	3,183 (6.56)	1,053 (4.63)	2,130 (8.25)	4.88	3.19	6.4
DM	24,227 (7.13)	13,068 (9.00)	11,159 (5.73)	6,677 (13.75)	3,932 (17.30)	2,745 (10.63)	7.39	7.56	7.16
Cancer	22,313 (6.56)	9,319 (6.42)	12,994 (6.67)	5,147 (10.60)	2,792 (12.28)	2,355 (9.12)	1.69	1.02	2.3
CVD	15,363 (4.52)	8,824 (6.08)	6,539 (3.36)	4,495 (9.26)	2,832 (12.46)	1,663 (6.44)	1.21	1.18	1.23
COPD	6,795 (2.00)	4,706 (3.24)	2,089 (1.07)	1,958 (4.03)	1,559 (6.86)	399 (1.55)	2.23	1.51	2.88
CKD	6,247 (1.84)	3,273 (2.25)	2,974 (1.53)	2,141 (4.41)	1,208 (5.31)	933 (3.61)	n.a.	n.a.	n.a.
CHF	3,859 (1.14)	1,604 (1.10)	2,255 (1.16)	1,345 (2.77)	632 (2.78)	713 (2.76)	n.a.	n.a.	n.a.

HBP: High Blood Pressure; DM: Diabetes Mellitus; CVD: Cardiovascular Disease; COPD: Chronic Obstructive Pulmonary Disease; CKD: Chronic Kidney Disease; CHF: Chronic Heart Failure; CoM: Comunidad de Madrid.

Note. The percentage associated with the total number of individuals with each comorbidity has been calculated with respect to the size of the sample to which it belongs (Group-1 N=339.890 and Group-2 N=48.556). The percentage of comorbidities in both sexes has been calculated with respect to the sex distribution in each of the groups.

The information provided in this article is concordant with an in-house report of the PC department of SERMAS [10], and few studies published in Spain [11-15] and Europe [16-18]. Generally, the comorbidities accompanying patients with COVID-19 have been studied more in the hospital setting than in PC [19-22]. For this reason, along with the fact that our analysis had a much larger sample size than the other published studies (the entire CoM), it is difficult to establish comparisons. Furthermore, the comparison becomes increasingly difficult due to the fact that there are no official statistics on comorbidities in the general population according to the age and sex. In our paper, we have tried to address this problem by offering in Table 1 the data from the National Health Survey [23].

Unlike our study, the SERMAS report does not include the comorbidities of patients with positive RT-PCR tests that is equivalent to our Group-2. However, it compares the comorbidities of patients seen in the PC who were hospitalized versus those who did not need it. We observed that the frequencies of comorbidities in our Group-1 were analogous to the group that was not hospitalized, while the frequencies of Group-2 were comparable to those that required hospitalization. These results are consistent with previous studies involving PC pa-

Table 2 **Absolute and relative (>0.5%) frequencies of most frequent comorbidities and its combinations in Groups 1 and 2.**

Group-1	N (%)	Group-2	N (%)
Comorbidities	113,884 (33.51%)	Comorbidities	23,156 (47.69%)
HBP	32,969 (28.95)	HBP	6,231 (26.91)
Asthma	19,511 (17.13)	DM + HBP	1,941 (8.38)
Cancer	9,557 (8.39)	Asthma	1,668 (7.2)
DM + HBP	7,469 (6.56)	Cancer	1,566 (6.76)
DM	5,935 (5.21)	DM	1,214 (5.24)
HBP + Cancer	4,422 (3.88)	HBP + Cancer	1,074 (4.64)
CVD + HBP	3,443 (3.02)	CVD + HBP	920 (3.97)
Asthma + HBP	3,057 (2.68)	CVD	647 (2.79)
CVD	2,947 (2.59)	Asthma + HBP	552 (2.38)
DM + CVD + HBP	1,722 (1.51)	DM + CVD + HBP	546 (2.36)
COPD	1,684 (1.48)	CKD + HBP	459 (1.98)
ERC + HBP	1,382 (1.21)	DM + HBP + Cancer	434 (1.87)
DM + HBP + Cancer	1,289 (1.13)	COPD + HBP	345 (1.49)
COPD + HBP	1,159 (1.02)	COPD	310 (1.34)
Asthma + Cancer	850 (0.75)	DM + CKD + HBP	243 (1.05)
CVD + HBP + Cancer	779 (0.68)	DM + CVD	242 (1.05)
DM + CVD	772 (0.68)	CVD + HBP + Cancer	227 (0.98)
Asthma + DM + HBP	670 (0.59)	HBP + CHF	210 (0.91)
DM + CKD + HBP	646 (0.57)	DM + Cancer	168 (0.73)
CKD	643 (0.56)	CVD + CKD + HBP	160 (0.69)
DM + Cancer	592 (0.52)	Asthma + DM + HBP	159 (0.69)
HBP + CHF	589 (0.52)	DM + CVD + HBP + Cancer	152 (0.66)
		CKD	148 (0.64)
		DM + COPD + HBP	139 (0.6)
		DM + CVD + CKD + HBP	138 (0.6)
		CVD + Cancer	132 (0.57)
		DM + HBP + CHF	117 (0.51)

HBP: High Blood Pressure; DM: Diabetes Mellitus; CVD: Cardiovascular Disease; COPD: Chronic Obstructive Pulmonary Disease; CKD: Chronic Kidney Disease; CHF: Chronic Heart Failure.

tients that tested positive for SARS-CoV-2 [19] or hospitalized patients [14].

The age ranges for Groups 1 and 2 were contrasted with the general population of the CoM [24]. This showed that the proportion of patients between 31 and 60 years in Group-1 (58.5%) was higher than that described for the general population (45.6%), but not so in the Group-2 (46.1%). However, the percentage of the general population (13.13%) over 70 years of age was close to that of the Group-1 (11.6%) but far from that seen in Group-2 (28.8%).

In most of the published studies, and in our analysis, the female sex predominates among COVID-19 patients. In Group-1, the relative frequency of women (57.3%) was the same as that observed for all the patients analysed in the SERMAS report [10] (57.2%), and in the other publications [18,19]. The category of non-hospitalized cases in the National Epidemiological Surveillance Network (RENAVE) cohort also consists of a higher proportion of women (65.5%) [15]. Similarly, the female sex (53.2%) is also prevalent in our Group-2. This preponderance of the female sex contrasts with the findings of the studies carried out in the hospitalized patients where, the male sex was most frequent [5,14,16,17]. In the SERMAS report [10] and the RENAVE cohort

Table 3 **Comorbidities: age range and sex distribution in Groups 1 and 2**

		Group-1; N (%)								Group-2; N (%)							
	Age range (Years)	HBP	Asthma	DM	Cancer	CVD	COPD	CKD	CHF	HBP	Asthma	DM	Cancer	CVD	COPD	CKD	CHF
Male	≥91	919 (1.37)	37 (0.14)	332 (1.37)	408 (1.83)	494 (3.22)	197 (2.90)	237 (3.79)	180 (4.66)	360 (2.26)	14 (0.44)	140 (2.10)	163 (3.17)	204 (4.54)	80 (4.09)	95 (4.44)	74 (5.50)
	81-90	4,467 (6.66)	247 (0.91)	1,996 (8.24)	1,969 (8.82)	2,111 (13.74)	1,204 (17.72)	958 (15.34)	658 (17.05)	1,815 (11.42)	87 (2.73)	851 (12.75)	748 (14.53)	847 (18.84)	484 (24.72)	378 (17.66)	272 (20.22)
	71-80	6,831 (10.18)	485 (1.79)	3,215 (13.27)	2,67 (11.97)	2,579 (16.79)	1,526 (22.46)	1,008 (16.14)	424 (10.99)	2,487 (15.64)	166 (5.22)	1,295 (19.39)	1,009 (19.60)	973 (21.65)	605 (30.90)	435 (20.32)	182 (13.53)
	61-70	7,004 (10.44)	650 (2.40)	3,169 (13.08)	1,981 (8.88)	1,894 (12.33)	1,042 (15.33)	523 (8.37)	179 (4.64)	1,739 (10.94)	153 (4.81)	892 (13.36)	527 (10.24)	506 (11.26)	300 (15.32)	172 (8.03)	69 (5.13)
	51-60	7,021 (10.47)	1,326 (4.89)	2,709 (11.18)	1,309 (5.87)	1,257 (8.18)	576 (8.48)	311 (4.98)	110 (2.85)	1,166 (7.33)	206 (6.47)	532 (7.97)	248 (4.82)	232 (5.16)	78 (3.98)	87 (4.06)	23 (1.71)
	41-50	3,475 (5.18)	2,014 (7.43)	1,141 (4.71)	634 (2.84)	377 (2.45)	135 (1.99)	139 (2.23)	27 (0.70)	393 (2.47)	184 (5.78)	160 (2.40)	72 (1.40)	59 (1.31)	11 (0.56)	29 (1.35)	7 (0.52)
	31-40	876 (1.31)	1,667 (6.15)	357 (1.47)	239 (1.07)	86 (0.56)	18 (0.26)	77 (1.23)	8 (0.21)	110 (0.69)	122 (3.83)	45 (0.67)	17 (0.33)	10 (0.22)	1 (0.05)	12 (0.56)	1 (0.07)
	21-30	135 (0.20)	1,584 (5.84)	114 (0.47)	77 (0.35)	13 (0.08)	7 (0.10)	16 (0.26)	13 (0.34)	9 (0.06)	92 (2.89)	15 (0.22)	5 (0.10)	1 (0.02)	0 (0)	0 (0)	2 (0.15)
	11-20	21 (0.03)	1,152 (4.25)	28 (0.12)	22 (0.10)	10 (0.07)	0 (0)	2 (0.03)	2 (0.05)	1 (0.01)	25 (0.79)	1 (0.01)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	0-10	2 (0)	483 (1.78)	7 (0.03)	10 (0.04)	3 (0.02)	1 (0.01)	2 (0.03)	3 (0.08)	0 (0)	4 (0.13)	1 (0.01)	3 (0.06)	0 (0)	0 (0)	0 (0)	2 (0.15)
Female	≥91	2,795 (4.17)	224 (0.83)	740 (3.05)	544 (2.44)	813 (5.29)	92 (1.35)	561 (8.98)	541 (14.02)	956 (6.01)	80 (2.51)	250 (3.74)	165 (3.21)	282 (6.27)	33 (1.69)	180 (8.41)	173 (12.86)
	81-90	7,158 (10.67)	832 (3.07)	2,427 (10.02)	1,573 (7.05)	1,964 (12.78)	327 (4.81)	1,124 (17.99)	1,029 (26.66)	2,339 (14.71)	265 (8.33)	851 (12.75)	514 (9.99)	654 (14.55)	97 (4.95)	374 (17.47)	363 (26.99)
	71-80	7,605 (11.34)	1,283 (4.73)	2,43 (10.03)	2,029 (9.09)	1,486 (9.67)	455 (6.70)	640 (10.24)	390 (10.11)	1,908 (12.00)	323 (10.15)	714 (10.69)	496 (9.64)	382 (8.50)	124 (6.33)	226 (10.56)	123 (9.14)
	61-70	7,589 (11.31)	1,832 (6.76)	2,161 (8.92)	2,468 (11.06)	1,07 (6.96)	602 (8.86)	307 (4.91)	156 (4.04)	1,275 (8.02)	317 (9.96)	458 (6.86)	453 (8.80)	206 (4.58)	92 (4.70)	87 (4.06)	30 (2.23)
	51-60	7,3 (10.88)	3,304 (12.19)	1,989 (8.21)	3,09 (13.85)	770 (5.01)	476 (7.01)	185 (2.96)	76 (1.97)	966 (6.08)	374 (11.75)	318 (4.76)	426 (8.28)	98 (2.18)	50 (2.55)	34 (1.59)	13 (0.97)
	41-50	3,068 (4.57)	3,874 (14.29)	903 (3.73)	2,195 (9.84)	308 (2.00)	116 (1.71)	100 (1.60)	33 (0.86)	304 (1.91)	346 (10.87)	94 (1.41)	225 (4.37)	33 (0.73)	2 (0.10)	18 (0.84)	8 (0.59)
	31-40	702 (1.05)	2,929 (10.81)	362 (1.49)	840 (3.76)	97 (0.63)	14 (0.21)	37 (0.59)	10 (0.26)	63 (0.40)	233 (7.32)	42 (0.63)	64 (1.24)	6 (0.13)	0 (0)	8 (0.37)	0 (0)
	21-30	100 (0.15)	1,894 (6.99)	109 (0.45)	217 (0.97)	25 (0.16)	3 (0.04)	14 (0.22)	13 (0.34)	7 (0.04)	167 (5.25)	14 (0.21)	12 (0.23)	2 (0.04)	1 (0.05)	4 (0.19)	3 (0.22)
	11-20	11 (0.02)	917 (3.38)	33 (0.14)	33 (0.15)	3 (0.02)	3 (0.04)	5 (0.08)	6 (0.16)	1 (0.01)	22 (0.69)	4 (0.06)	0 (0)	0 (0)	0 (0)	2 (0.09)	0 (0)
	0-10	5 (0.01)	373 (1.38)	5 (0.02)	5 (0.02)	3 (0.02)	1 (0.01)	1 (0.02)	1 (0.03)	0 (0)	3 (0.09)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
	Male	30,751 (45.84)	9,645 (35.58)	13,068 (53.94)	9,319 (41.76)	8,824 (57.44)	4,706 (69.26)	3,273 (52.39)	1,604 (41.57)	8,080 (50.82)	1,053 (33.08)	3,932 (58.89)	2,792 (54.25)	2,832 (63.00)	1,559 (79.62)	1,208 (56.42)	632 (46.99)
	Female	36,333 (54.16)	17,462 (64.42)	11,159 (46.06)	12,994 (58.24)	6,539 (42.56)	2,089 (30.74)	2,974 (47.61)	2,255 (58.43)	7,819 (49.18)	2,13 (66.92)	2,745 (41.11)	2,355 (45.75)	1,663 (37.00)	399 (20.38)	933 (43.58)	713 (53.01)
	Total	67,084	27,107	24,227	22,313	15,363	6,795	6,247	3,859	15,899	3,183	6,677	5,147	4,495	1,958	2,141	1,345

HBP: High Blood Pressure; DM: Diabetes Mellitus; CVD: Cardiovascular Disease; COPD: Chronic Obstructive Pulmonary Disease; CKD: Chronic Kidney Disease; CHF: Chronic Heart Failure.

Note. The percentage (included in parentheses) has been calculated with respect to the total number of patients with a certain comorbidity in each sex and age group.

[15], men predominated (54.3% and 55.6%, respectively) among the patients who had to be hospitalized.

From the beginning of the pandemic, publications focused on identifying the variables that could predict the outcomes in patients with COVID-19. The Chinese Centre for Disease Control and Prevention reported in an early study of 44,672 people (1,023 deaths) that CVD, HBP, DM, respiratory disease, and cancer were associated with an increased risk of death [25]. It also concluded that the fatality rate was increasing with age, and the male patients had a higher risk of death than the female patients. The HBP (most frequent comorbidity in our study) was observed to be an important source of complications such as heart failure, and adverse results [26], thus proving the effect that previous comorbidities have on the evolution of patients with COVID-19. This emphasizes the need to maintain routine control of the chronically ill, especially in pandemic situations like the one we live in [27]. Data collected throughout Spain until May 21st, 2020, by RENAVE [28] also demonstrate that the age and gender are significant risk factors for severe COVID-19 outcomes. For instance, 68% of COVID-19-related ICU admissions were men, and more than 55% of hospitalizations and deaths were also from this sex. This observation, together with the data from our study, leads us to hypothesize the reason for the unfavourable profile of our Group 2 (proven COVID-19). The fact that 47.7% of the individuals in this group presented at least one comorbidity with an average age of 69.9 years, helps us to understand the distressing outcomes seen in the CoM during the first wave of the current pandemic.

Similar to our study, the SERMAS report [10] underpins the crucial role of the PC in the period studied. Out of its total cohort, only 10.6% were hospitalized, and of the 222,905 patients with symptoms —cough (70%), fever (44%) and dyspnoea (31%) were the most frequent. About 90.7% of this group had their first consultation in a PC centre, while the rest (9.3%) had it in the hospital.

The limitations of this paper are due to the circumstances surrounding the outbreak of the first wave. The scarcity of the microbiological tests could explain, in part, why most cases in our cohort (71%) were labelled as "suspected infection". However, it should be mentioned that when a RT-PCR test could be performed, it was positive in 85% of patients diagnosed as infected, whereas, in those diagnosed as suspected, the percentage of positives dropped to 41% (Figure 1). This finding gives value to the clinical judgment of PC doctors, especially, considering that they were evaluating a new nosological entity. It should also be noted that the CCC received the information from the SERMAS. Among the data not received and the ones that are most lacking are those related to the symptomatology profile, hospitalization, and the mortality of patients seen by the family doctors. Despite these limitations, the strength of this study lies in the large sample of COVID-19 patients it evaluates using a robust study design that stratifies individuals according to the comorbidities, sex, age, and the result of RT-PCR tests (Tables 1-3).

In summary, the impact of the first wave of the SARS-CoV-2 pandemic on the health care system in the CoM is explained in addition to other relevant factors. It was observed that the older individuals with a significant disease burden became sicker and developed severe disease. As the figures show, many patients seeking medical attention for COVID-19 were seen at the PC centres emphasising their key role. This is especially true when a health crisis erupts overwhelming the healthcare systems and the hospitals with unusually high demand for patient care [29]. Therefore, it is essential that PC physicians can identify, diagnose, and carry out a follow-up on patients whose comorbidities, sex and age make them vulnerable and prone to hospitalization. Additionally, the data provided in this paper should serve as a useful guide to prescribe current therapies such as the monoclonal antibodies or any other available in the future.

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CONFLICT OF INTEREST

All authors declare no conflict of interest.

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