



# Suicidal thoughts and burnout among physicians during the first wave of the COVID-19 pandemic in Spain

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## ARTICLE INFO

### Keywords:

Suicide  
Suicidal thoughts  
Physician population  
Pandemic

## ABSTRACT

**Background:** The exact mechanisms through which the impact of the SARS-CoV-2 pandemic could influence the prevalence of suicidal thoughts are not yet known, both in the general population and in health workers. The objectives of the present study are to determine the prevalence of suicidal thoughts in the physician population and to detect sociodemographic and clinical variables associated with presenting suicidal thoughts during the first wave of COVID-19.

**Methods:** Cross-sectional observational study via an online survey distributed in Spain in June 2020 via 52 Official Medical Associations. The sample is made up of all practicing and registered physicians in Spain (3,140 of the 270,235 registered physicians in Spain). An online questionnaire which included sociodemographic, professional and work variables, variables related to the pandemic, work data in relation to COVID-19 and clinical variables (medical-psychiatric history and previous suicidal behaviour) was distributed.

**Results:** In our sample, the prevalence of serious suicidal thoughts was 6.31% and up to 17.32% of the subjects reported thoughts about killing themselves during the pandemic. Being female (Exp (B)= 1.989, p=0.001), presence of previous suicide attempts (Exp(B)= 6.127, p=<0.001), taking a psychotropic drug (Exp(B)= 2.470, p=<0.001) and working in a different area during the pandemic (Exp(B)= 1.751, p= 0.037) were associated with a higher risk of suicidal ideation. Cohabiting was a protective factor in the development of suicidal ideation although not in all our measures (Exp(B)=0.940, p=0.850 Vs Exp (B)= 0.620, p=0.018).

**Limitations:** The main limitation of this study is its cross-sectional nature, which prevents establishing a causal relationship. As a strength, it stands out that it is a large sample of the population studied and in a particularly complex context of the pandemic.

**Conclusions:** Suicidal thoughts among the Spanish registered physician population during the pandemic is high and mainly associated with socio-demographic factors, clinical mental health variables, and aspects of job satisfaction.

## 1. Introduction

In March 2020, the WHO declared the SARS-CoV-2 virus pandemic. Since the onset, this pandemic has alerted many experts through different channels about the possibility of an increase in suicide, calling the combination of factors the perfect storm, since the pandemic and the political-health measures to contain it favour some known risk factors

for suicide (Reger et al., 2020; Brown and Schuman, 2021).

To date, various studies have been conducted on the prevalence of suicidal thoughts and behaviours, as well as other psychological variables during the SARS-CoV-2 pandemic. Studies in the general population indicate similarities in the percentage of suicidal ideation between countries. In Asian countries, suicidal ideation rates in the two weeks prior to the survey appear to be 2.8% to 15.5% (Ren et al., 2020; Yang

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<https://doi.org/10.1016/j.psychres.2023.115057>

Received 14 May 2022; Received in revised form 7 January 2023; Accepted 13 January 2023

Available online 22 January 2023

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et al., 2020; Bressington et al., 2020; Li et al., 2020; Mamun et al., 2020; Tasnim et al., 2020), a range similar to that found in Anglo-Saxon countries (4.5%–15%) (Fisher et al., 2020; Staples et al., 2020; Every-Palmer et al., 2020; Bryan et al., 2020; Czeisler et al., 2020; Fitzpatrick et al., 2020) although the percentage rises to 18.04%, in students (Wang et al., 2020). The prevalence of suicidal ideation in South America (7.6%) (Caballero-Domínguez et al., 2020) and in Europe (11.88%) (Winkler et al., 2020) shows intermediate values. Suicidal intention figures are estimated to be 2% to 3.7% (Staples et al., 2020; Every-Palmer et al., 2020), while the incidence of suicide attempts would be 2% (Every-Palmer and cols., 2020). On the other hand, worldwide depression figures are estimated to be in most online surveys 11.77% to 27.6% (Ren et al., 2020; Yang et al., 2020; Bressington et al., 2020; Mamun et al., 2020; Fisher et al., 2020; Wang et al., 2020; Winkler et al., 2020; Wathelet et al., 2020; O'Connor et al., 2020), although there are studies that indicate a value of 44.6% (Shi et al., 2018) and others as high as 70% (Staples et al., 2020). The percentages of anxiety are generally 12.84% to 21% (Ren et al., 2020; Yang et al., 2020; Fisher et al., 2020; Every-Palmer et al., 2020; Winkler et al., 2020; Wathelet et al., 2020; O'Connor et al., 2020) with a higher figure in students 38.48% (Wang et al., 2020).

During the pandemic, the pressure on health systems due to high hospital occupation has been the general trend worldwide and especially among frontline professionals. Surveys of this population do not indicate a higher percentage of suicidal ideation than the general population, but they do indicate a higher percentage of other disorders. In a study on frontline hospital workers and nurses, suicidal ideation was 5% to 13.0% (Hong et al., 2020; Xiaoming et al., 2020; Zhou et al., 2020; Sharif et al., 2020; Young et al., 2020). In healthcare, the depression figures ranged from 9.4% to 57.6% (Hong et al., 2020; Xiaoming et al., 2020; Zhou et al.; Young et al., while those of anxiety ranged from 8.1% to 45.4% (Hong et al., 2020; Xiaoming et al., 2020; Zhou et al., 2020). Kang and his group associated the greater emotional impact on the medical community compared to the general population to high risk of infection and inadequate protection against potential contagion, work overload, frustration, isolation, exposure to patients with negative emotions, lack of contact with family members, and exhaustion (Kang et al., 2020). In a review by Preti et al., studies showed that health workers in units at high risk of infection had more severe mental health outcomes, compared to health workers in units with low risk of infection (Preti et al., 2020), but in line with what is reported by Cai's team, the prevalence of suicidal ideation did not differ (Cai et al., 2020).

The intimate mechanisms through which the impact of the SARS-CoV-2 pandemic could influence the prevalence of suicidal ideation, both in the general population and in health professionals, are not yet precisely known. Some sociodemographic risk factors associated with suicidal ideation common to both population groups have been identified, such as being female (OR = 2.50; 95% CI = 1.83–3.42;  $p < 0.001$ ), being divorced (OR = 3.77; 95% CI = 1.64–8.68;  $p < 0.001$ ) and not having children (OR = 1.793; CI = 1.318–2.437;  $p < 0.001$ ) (Mamun et al., 2020). In health professionals, the greatest risk has been identified with: being female, an ethnic minority, a lower level of education (Mamun et al., 2020; Xiaoming et al., 2020) and an inverse relationship between years of experience and family income (Zhou et al., 2020). However, the impact of specific occupational factors or those related to preventive measures against the spread of the SARS-CoV-2 virus has not been fully specified.

The relationship between mobility restrictions and increased suicide risk does not appear to be clear from the studies, with conflicting results (Bryan et al., 2020; Xin et al., 2020). However, one of the factors identified as mediators between the social situation of the pandemic and a higher risk of suicide has been loneliness. Feelings of loneliness have been associated with greater suicidal ideation (Killgore et al., 2020a; Killgore et al., 2020b; Killgore et al., 2020c) and these feelings of loneliness were greater in places where there had been restrictions on social contact. Not only did these feelings remain despite these

restrictions being lifted (Killgore et al., 2020b; Killgore et al., 2020c), they increased month after month in places where social isolation measures had been applied (Killgore et al. cols., 2020d). Other mediators of suicidal ideation identified have been insomnia (Killgore et al., 2020e), psychological inflexibility (Crasta et al., 2020), and thwarted belongingness from the interpersonal theory of suicide (Gratz et al., 2020).

The objectives of the present study are twofold: first, to determine the prevalence of suicidal ideation in the physician population registered in our country and second, to detect sociodemographic and clinical variables associated with presenting suicidal ideation in this group. All procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2013.

## 2. Methods

Cross-sectional observational study via an online survey distributed in Spain in June 2020 via 52 Official Medical Associations. The sample is made up of all practicing and registered physicians in Spain who have completed the survey after receiving it online via the dissemination channel established for this purpose by their respective Medical Association. Doctors will be classified according to whether they have treated patients with COVID-19 (mild, moderate, severe) versus those who have not treated coronavirus or have treated other pathologies.

An online questionnaire which included sociodemographic, professional (specialty, province of work, scope of work, years of work experience) and work variables (weekly working hours, number of times on call), variables related to the pandemic (sick, on sick leave, in isolation through contact, positive for COVID, sick relatives, death of someone close), work data in relation to COVID-19 (activity with COVID +, work other than specialty, telemedicine, protection measures, training) and clinical variables (medical-psychiatric history and previous suicidal behaviour) was distributed. For the psychological variables, a Likert-type scale was used to assess mood, anxiety, consumption of toxic substances, burnout, suicide risk, and reasons for living. Finally, the following scales were administered: General Health Questionnaire of 28 items (GHQ-28), self-administered questionnaire for the detection of social dysfunction and psychosomatic problems, anxiety and four subscales of depression (somatic symptoms, anxiety and insomnia, social dysfunction, and severe depression). Maslach Burnout Inventory (22 items), an instrument for evaluating burnout with three dimensions: emotional exhaustion, depersonalization, and personal fulfilment. Paykel Suicide Scale evaluated the presence of suicidal ideation and passive and active behaviours during the last year, which in our case referred to the time from the beginning of the pandemic. Subjects who responded affirmatively to "Have you reached a point where you really considered taking your own life or did you make plans about how you would do it?" were considered to have active suicidal ideation whereas subjects who responded affirmatively to "Have you thought about taking your life even if you weren't really going to?" were considered to have passive suicidal ideation.

### 2.1. Statistical analysis

The study groups were compared using chi square for dichotomous variables, Student's *t* for continuous variables, and logistic regression with significant variables to identify confounding factors. Finally, a regression model was developed with all those variables considered relevant.

## 3. Results

Respondents accounted for 1.16% of all the registered physicians in Spain, in total 3,140 of the 270,235 registered physicians in Spain,

according to data from the General Council of Official Medical Associations of Spain.

### 3.1. Sample description

The sample represented 3,140 physicians (Table 1). The mean age was 47.8 years; 63.4% were male and 69.4% had a partner. Of these 88.1% cohabited, 31% with one other person, 53.5% with 2-4 other people and 3% with 5 or more other people. Moreover, 42.6% did not cohabit with children while 57.4% cohabited with at least one child. It is noteworthy that 14.2% of the sample cohabited with people over 65 years of age and 27.3% cohabited with people with risk factors (serious pneumological, heart, kidney, or liver diseases, immunosuppressed, severe obesity and diabetes). Of them, 32.9% reported that their partner belonged to the health care environment.

### 3.2. Professional and labour variables

Only 8.4% of the sample were Resident Intern Physicians. Of the

**Table 1**  
General sociodemographic and laboral variables.

Age	47.825
Gender	
- Female	1140 (36.3%)
- Male	1990 (63.4%)
- Not specified	10 (0.3%)
Marital status	
- No partner	961 (30.6%)
- Partner	2179 (69.4%)
Household	
- Alone	387 (11.9%)
- Cohabiting	2857 (88.1%)
Num. of children in the household	
- None	1382 (44%)
- 1	596 (19%)
- 2	838 (26.7%)
- 3 or more	323 (10.3%)
Num. of people > 65 in the household	
- None	2782 (85.8%)
- Some	462 (14.2%)
Num. of people in the household with risk factors for COVID	
- None	2359 (72.7%)
- Some	885 (27.3%)
Is your partner a health professional?	
- Yes	1034 (32.9%)
- No	2106 (67.1%)
Years of experience as a physician	
- 0-5 years	340 (10.5%)
- 6-10 years	365 (10.9%)
- 11-15 years	366 (11.3%)
- 16-20 years	452 (13.9%)
- >20 years	1627 (50.2%)
Have you been or are a Resident Intern during the present year?	
- Yes	251 (8.4%)
- No	2740 (91.6%)
Number of times on duty per month	
- 0	1241 (39.5%)
- 1-3	556 (17.7%)
- 4-5	761 (24.2%)
- >5	582 (18.5%)
Have you worked in an area different from your category?	
- No	2520 (77.7%)
- Yes	724 (22.3%)
Habitual work during the pandemic	
- Non COVID	355 (10.9%)
- COVID	2889 (89.1%)
Have you provided backup during the pandemic?	
- Non COVID	2244 (69.2%)
- COVID	1000 (30.8%)
Main work during the pandemic	
- Non COVID	2398 (73.9%)
- COVID	846 (26.1%)

respondents, 50.2% claimed to have more than 20 years of experience, 13.9% between 16 and 20 years, 11.3% between 11 and 15 years, 10.9% between 6 and 10 years while 10.5% between 0 and 5 years of work experience. Regarding the number of times they had been on call per month, 39.5% had not been on call, 17.7% had been on call 1 to 3 times, 24.2% had been 4 or 5 times, and 18.5% had been on call more than 5 times per month. In relation to the area of work, 22.3% stated they had performed work outside their category, 89.1% had routinely worked with COVID patients during the pandemic, with 26.1% claiming this was their main job while 30.8% had provided backup for patients with COVID-19.

### 3.3. Variables related to the pandemic

Regarding the fear of being infected, 35.5% confessed to being a little bit scared, 39.7% were quite scared and 17.9% were really scared, while only 6.1% were not scared at all (Table 2). Regarding the fear of infecting their family, 13.5% were a little bit scared, 38.8% were quite scared and 38.8% were really scared, while only 3.5% were not scared at all. Regarding the fear of infecting the patients themselves, 29.4% were a little bit scared, 35.5% were quite scared and 17.9% were really scared, while 8.3% were not scared at all.

### 3.4. Clinical variables

From among them, 2% required hospital admission and 0.4% were admitted to an Intensive Care Unit. Regarding psychological support during the pandemic, 37.5% did not know about any type of established support, while 62.5% did know about different types of psychological support available. Regarding personal protective equipment, 5.1% stated that they did not need it. After personal protective equipment was provided, in February only 2.9% were equipped, in March 34.3%, in April 31.6%, in May 10% while in June 8.5% were not yet equipped, with up to 4.4% claiming they had no personal protective equipment at any time.

**Table 2**  
Variables related to the pandemic.

Have you been scared of being infected?	
- Not at all	187 (6.1%)
- A little bit	1093 (35.5%)
- Quite scared	1222 (39.7%)
- Really scared	500 (17.9%)
Have you been scared of infecting your family?	
- Not at all	112 (3.5%)
- A little bit	438 (13.5%)
- Quite scared	1260 (38.8%)
- Really scared	1258 (38.8%)
Have you been scared of infecting your patients?	
- Not at all	270 (8.3%)
- A little bit	953 (29.4%)
- Quite scared	1151 (35.5%)
- Really scared	580 (17.9%)
Have you been admitted to hospital?	
- No	3179 (98%)
- Yes	65 (2%)
Have you been admitted to ICU?	
- No	3232 (99.6%)
- Yes	12 (0.4%)
Have you been aware of options for psychological support?	
- No	1217 (37.5%)
- Yes, several	2027 (62.5%)
What month was your PPE provided?	
- I didn't need any	165 (5.1%)
- February	95 (2.9%)
- March	1112 (34.3%)
- April	1025 (31.6%)
- May	324 (10%)
- June	275 (8.5%)
- It didn't arrive	143 (4.4%)

3.5. Psychometric scales

3.5.1. GHQ-28

In our study, 1912 (60.89%) subjects tested positive for the GHQ-28 questionnaire, with being female a protective factor (Exp (B) = 0.359, p <0.001) and risk factors being taking psychotropic drugs (Exp (B) = 2.399, p <0.001), suffering depersonalization burnout (Exp (B) = 1.793, p <0.001), derealization burn out (Exp (B) = 1.495, p <0.001), emotional exhaustion type burnout (Exp (B) = 8.605, p <0.001), having provided backup during the pandemic (Exp (B) = 1.375, p = 0.002) and having been hospitalized (Exp (B) = 2.581, p = 0.007) (Table 3).

3.5.2. Paykel suicide scale: active suicidal ideation

In our sample, the prevalence of active suicidal ideation was 6.31%. Having considered taking their own life was related to being female (Exp (B)= 1.724, p <0.001) risk factors being having had a suicide attempt (Exp (B) = 15.426, p <0.001), taking some psychotropic drug (Exp (B) = 2.346, p <0.001), scoring positive for emotional exhaustion burnout (Exp (B) = 1.527, p = 0.037) and for personal fulfilment (Exp (B) = 1.524, p = 0.013).

3.5.3. Paykel suicide scale: passive suicidal ideation

In our sample, the prevalence of passive suicidal ideation was 17.32%. Really thinking about killing oneself during the pandemic was related to being female (Exp (B) = 1.452, p <0.001) and age, although age is a protective factor as life progresses (Exp (B) = 0.981, p <0.001). Having provided backup in a Covid unit (Exp (B) = 0.761, p = 0.017) and having worked in a Covid unit (Exp (B) = 0.752, p = 0.019) are also protective factors. However, having had a suicide attempt (Exp (B) = 12.272, p <0.001), having worked in a different area (Exp (B) = 1.345, p = 0.022), taking a psychotropic drug (Exp (B) = 1.649, p <0.001), a positive GHQ28 (Exp (B) = 1.939, p <0.001) and having emotional exhaustion burnout (Exp (B) = 1.681, p <0.001) are risk factors (Table 4).

3.5.4. Burnout emotional exhaustion

Regarding emotional exhaustion, 1341 subjects (42.71%) scored positively, and 1798 individuals (57.26%) scored negatively. Presenting emotional fatigue was related to risk factors such as being female (Exp (B) = 1.228, p = 0.021), taking a psychotropic drug (Exp (B) = 2.269, p <0.001), GHQ28 (+) (Exp (B) = 11.306, p <0.001) and providing backup during the pandemic (Exp (B) = 1.200, p = 0.05).

3.5.5. Burnout depersonalisation

Regarding depersonalization, 1525 subjects (48.57%) scored positively, and 1614 individuals (51.4%) scored negatively. Depersonalization was related to risk factors such as gender (Exp (B) = 1.282, p = 0.002), taking a psychotropic drug (Exp (B) = 1.431, p <0.001), GHQ28 (+) (Exp (B) = 4.187, p <0.001) and working during the pandemic

**Table 3**  
GHQ-28 scores regression model.

	Exp (B)	p (sig.)
Age	0.998	0.104
Female	0.359	<0.001
Cohabits	1.107	0.474
Has made previous attempt(s)	1.563	0.220
Has worked in a different area during the pandemic	0.918	0.486
Takes a psychotropic drug	2.399	<0.001
Burnout (emotional exhaustion +)	8.605	<0.001
Burnout (depersonalisation +)	1.793	<0.001
Burnout (personal realization +)	1.495	<0.001
Provided backup during the COVID pandemic	1.375	0.002
Main work during the pandemic was in COVID area	1.641	<0.001
Was admitted as a result of COVID	2.581	0.007
Was in ICU as a result of COVID	1.314	0.717
Constant	0.518	<0.001

**Table 4**  
Active and passive suicidal ideation regression model.

	Active suicidal ideation		Passive suicidal ideation	
	p (sig.)	Exp (B)	p (sig.)	Exp (B)
Age	0.096	0.988	<0.001	0.981
Female	<0.001	1.724	<0.001	1.452
Cohabits	0.018	0.620	0.093	0.786
Has made previous attempt(s)	<0.001	15.426	<0.001	12.272
Has worked in a different area during the pandemic	0.184	1.292	0.022	1.345
Takes a psychotropic drug	<0.001	2.346	<0.001	1.649
GHQ28 (+)	0.134	1.393	<0.001	1.939
Burnout (emotional exhaustion +)	0.037	1.527	<0.001	1.681
Burnout (depersonalisation +)	0.265	1.234	0.062	1.245
Burnout (personal realization +)	0.013	1.524	0.148	1.163
Provided backup during the COVID pandemic	0.068	1.359	0.017	0.761
Main work during the pandemic was in COVID area	0.378	0.849	0.019	0.752
Was admitted as a result of COVID	0.649	0.761	0.335	0.671
Was in ICU as a result of COVID	0.548	2.003	0.675	1.418
Constant	<0.001	0.038	<0.001	0.202

providing backup (Exp (B) = 1.190, p = 0.043).

3.5.6. Burnout personal realisation

Regarding personal realisation, 1579 subjects (50.29%) scored positively, and 1510 individuals (48.09%) scored negatively. Personal realisation was related with risk factors age (Exp (B) = 1.013, p <0.001), taking a psychotropic drug (Exp (B) = 1.400, p <0.001), scoring positively in GHQ28 (Exp (B) = 2.045, p <0.001) and working during the pandemic mainly in COVID units (Exp (B) = 1.194, p = 0.047). Cohabiting was a protective factor (Exp (B) = 0.587, p <0.001) (Table 5).

**Table 5**  
Burnout regression model.

	Burnout emotional exhaustion		Burnout depersonalisation		Burnout personal realisation	
	p (sig.)	Exp (B)	p (sig.)	Exp (B)	p (sig.)	Exp (B)
Age	0.860	1.000	0.770	1.000	<0.001	1.013
Female	0.021	1.228	0.002	1.282	0.133	1.123
Cohabits	0.152	0.833	0.416	0.909	<0.001	0.587
Has made previous attempt(s)	0.804	0.933	0.641	1.132	0.421	1.234
Has worked in a different area during the pandemic	0.850	1.021	0.983	1.002	0.521	0.938
Takes a psychotropic drug	<0.001	2.269	<0.001	1.431	0.001	1.400
GHQ28 (+)	<0.001	11.306	<0.001	4.187	<0.001	2.045
Provided backup during the COVID pandemic	0.051	1.200	0.043	1.190	0.640	0.962
Main work during the pandemic was in COVID area	0.593	1.054	0.075	1.174	0.047	1.194
Was admitted as a result of COVID	0.210	0.694	0.641	1.139	0.336	0.770
Was in ICU as a result of COVID	0.489	0.616	0.393	0.577	0.886	0.915
Constant	<0.001	0.122	<0.001	0.319	0.001	0.509



#### 4. Discussion

To our knowledge, this study is the first to show the prevalence of suicidal ideation and associated sociodemographic and clinical factors in representative a sample of the registered physician population during the SARS-CoV-2 pandemic. The results of the present study indicate a high prevalence of suicidal ideation in the Spanish physician population. The 6.31% prevalence of an active suicidal ideation, in which participants seriously considered suicide or had made plans to commit suicide are consistent with the prevalence figures reported in international studies that have been conducted through online surveys (Sharif et al., 2020; Xu et al., 2021; Bruffaerts et al., 2021), but higher than the prevalence of active suicide ideation of 3.5% reported for Spanish hospital workers (Mortier et al., 2021). In this last study, the prevalence found was not restricted only to registered physicians in medical associations, but it also included that of other health professionals; therefore, a direct comparison of the results is not possible. When our study refers to the percentage of participants who indicate having thought about killing themselves during the pandemic, the prevalence of suicidal ideation rises to over 17%, a higher figure than those described in the Chinese physician population at the beginning of the SARS-CoV-2 pandemic (Xu et al., 2021; Cai et al., 2020). Although data are available on the prevalence of suicidal ideation throughout life in the general Spanish population (Miret et al., 2014), no specific information has been collected on the prevalence of suicidal ideation among Spanish registered physicians previous to the SARS-CoV-2 pandemic, which limits knowledge on whether there has been an increase in this prevalence in the context of the SARS-CoV-2 pandemic among this population. What is a known fact, as revealed in the report of the Spanish Organization of Medical Associations in October 2019, is that the percentage of suicides in Spain in the period between 2005 and 2014 is higher in the physician population (average of 1.3%) than the general population (average of 0.8%) ( $X^2 = 26.409$ ,  $p = 0.003$ ) (Irigoyen-Otiñano M. et al., 2022). Regarding the prevalence of suicidal ideation among physicians, a recent aforementioned study from 2020, carried out in the United States reveals that 23% of men and 22% of women physicians had presented suicidal ideation while 1% and 2% respectively had already attempted suicide (Medscape National Physician Burnout & Suicide Report, 2020). The systematic review carried out in 2019 by Duthell's team also concluded that the suicide mortality rate was higher in the physician population with a higher risk in the case of female physicians (Duthell et al., 2019). The 2020 meta-analysis of the Dante Duarte group (Duarte et al., 2020), found a significantly higher suicide mortality rate in female physicians compared to women in the general population and a lower suicide mortality rate in male physicians compared to men in the general population.

The factors associated with active suicidal ideation in the Spanish registered physician population found in our study can be distributed into three main groups: sociodemographic characteristics, clinical variables and working conditions. Regarding the sociodemographic characteristics, being female was associated with a higher risk of suicidal ideation, a finding consistent with the literature on risk factors for suicidal ideation both in the general population and in the physician population (Xiaoming et al., 2020; Mamun et al., 2020). Cohabiting was a protective factor in the development of suicidal ideation, which is consistent with the lines of research that point at loneliness as a risk factor for suicidal ideation (Killgore et al., 2020a; Killgore et al. cols., 2020b; Killgore et al., 2020c). The results of our study seem to support that loneliness could be a risk factor for suicidal ideation in the physician population. Age was a protective factor for suicidal ideation, with prevalence decreasing over the years. This is also consistent with the demographic results of suicidal behaviour in the general population, which reaches its peak between the second and third decade of life but later decreases. However, what must be taken into account is that several studies report that suicide in physicians was more frequent in later years (Rose and Rosow, 1973; Petersen and Burnett, 2008).

Regarding the clinical variables, our results suggest that registered physicians with previous or current manifestations related to mental health, such as having had a history of previous suicidal behaviour, consuming a psychotropic drug, or presenting scores above the cut-off for GHQ-28, would have a higher risk of suicidal ideation, which is consistent with the diathesis-stress model of suicidal behaviour (Mann and Rizk, 2020). Regarding the variables related to the work situation of physicians, what stands out is that having worked in a different area during the pandemic was associated with a higher risk of suicidal ideation. However, it was not necessarily related to direct work with COVID-19 + patients, since, on the contrary, working in specific COVID-19 wards was a protective factor in the development of suicidal ideation. It is possible that this result is related to difficulties of psychological adjustment to the new tasks and not necessarily to the type of patients treated during the pandemic, which would be consistent with the results that find a relationship between difficulties in cognitive flexibility and suicidal behaviour (Crasta et al., 2020). Moreover, an association was also observed between one of the measures of burnout: emotional exhaustion, and suicidal ideation, which seems consistent with the aforementioned relationship between the clinical variable mental health in the questionnaire emotional well-being and suicidal ideation.

The results of the study could have significant implications given that if the need for adequate mental health support for medical practitioners has been pointed out in situations such as the current SARS-CoV-2 pandemic (Alonso et al., 2021), in the case of physicians with factors of greater vulnerability to the development of suicidal ideation, this support is considered even more necessary. Although the transition between ideation and suicide attempt is not exactly known (Diekstra and Garnefski, 1995), physicians may be more aware of these characteristics than the general population (Hem et al., 2000) and therefore suicidal thoughts among the physician population should be given our utmost attention. In addition, it is known that physicians rarely seek help regardless of the severity of their emotional symptoms (Cai et al., 2020). There are reasons to believe that depression in physicians is not treated; physicians are less likely to seek help or treatment since they consider it a stigma for the profession (Wallace, 2012). A 2014 survey revealed that 40% of physicians would be reluctant to seek mental health care due to fear of losing their license to practice (Dyrbye et al., 2017). It is relatively common for physicians to treat exhaustion and depression alone using harmful coping strategies such as alcohol or other drug abuse (Waddimba et al., 2019). Depressed physicians often feel like failures, isolated, with difficulties fitting into the work environment, with the perception of being a burden even in their personal environment or for society, hence suicide appears as an alternative to their discomfort (Cornette et al., 2009). In view of all this and in accordance with the deontological duty contained in article 22 of chapter IV of the code of medical deontology, institutional initiatives that allow and facilitate the search for prompt, non-stigmatizing help are deemed necessary (Comisión Central de Deontología, 2011).

#### 5. Limitations and strengths

The main limitation of this study is its cross-sectional nature, which prevents establishing a causal relationship. As a strength it stands out that it is a large and representative sample of the studied population.

#### 6. Conclusions

Suicidal ideation among the Spanish registered physician population during the pandemic is high and mainly associated with socio-demographic factors (female sex, young age, living alone), clinical mental health variables (previous suicide attempts, taking psychotropic medication, GHQ28+) aspects of job satisfaction (Burnout, working in a different area during the pandemic). The results of this study suggest that it is necessary to develop detection, referral and intervention

strategies for those physicians at a higher risk of suicidal behavior. And further studies about the mental health impact on physicians, specially taking care of female doctors.

## Declaration of Competing Interest

The authors have no conflict of interest in relation to the preparation of this manuscript.

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