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Research paper

Prevalence and correlates of suicidality in Andalusia (Spain): Results of the epidemiological study PISMA-ep

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A B S T R A C T

Background: Suicidality is an important public health problem. Hence, the aims of this study are to report prevalence rates and correlates of suicidality in Andalusia (Southern Spain).

Methods: This is a cross-sectional household survey conducted on a representative sample of adults living in Andalusia. 4507 subjects were interviewed using the Mini International Neuropsychiatric Interview (MINI) to assess suicidality and standardized instruments were employed to evaluate associated variables. A multivariate logistic regression analysis was used to explore independent associations with suicidality.

Results: Current prevalence of suicidality was 6.4%, 4.4% showed death wish, 1.4% had ideas of self-harm, 2.4% had suicidal thoughts, 1.1% had a suicidal plan, 0.6% had attempted suicide during the month prior to the interview, and, lastly, 2.6% reported to have had any sort of suicide attempt during his/her previous life. Independent factors associated with suicidality were being female, older age, not having a stable couple, lower levels of social support, having had physical childhood abuse experience, having experienced an increasing number of stressful life events, higher neuroticism scores, having a family history of mental disorder and nicotine or drugs dependence.

Limitations: The instrument employed to measure suicidality is a screening tool rather than a more in-depth diagnostic measure. We have not included all potential correlates of suicidality. This is a cross-sectional study which cannot establish causal relationships between exposures and outcomes.

Conclusions: This is the first epidemiological study in Andalusia on suicidality offering important results of clinical interest for suicide prevention.

1. Background

Suicide is a very important public health problem. According to the World Health Organization (WHO) over 800,000 people die due to suicide every year. For each person who dies by suicide, more than 20 others attempt suicide. In fact, suicide attempts are an important risk factor for subsequent suicide (WHO, 2019). If relatives, friends and the community of the person who attempts suicide or commit suicide are taken into account, millions of people are affected worldwide by this phenomenon every year (Pitman et al., 2014; Cerel et al., 2019; WHO, 2019). A worldwide systematic review (Nock et al., 2008b) showed that for adults, the lifetime prevalence of suicidal ideation ranged from 3.1–56%; suicide planning ranged between 0.9–19.5% and suicide attempts ranged between 0.4–5.1%. A recent meta-analysis of epidemiological studies about suicidal behavior of the general population in Europe developed by our research group concluded that for point prevalence, the rate for all suicidal behavior was 3.96% (2.37 – 5.56), for death wishes 1.8% (0.95 – 2.12), for suicidal ideation 5.28% (3.5 – 7.06), and for suicidal attempt 0.63% (− 0.09 – 1.36) (Castillejos et al., 2020). The Table 1 details prevalence of suicidality and its different components in European studies.

Concerning risks factors for suicidality, data collected in epidemiological studies round the world indicate that suicidal behavior is associated with a variety of demographic, psychosocial and clinical factors (Nock et al., 2008b; Simon, 2010). A well-established correlated factor for suicidal risk is the presence of mental disorders (Mann et al., 2005; Bebbington et al., 2009; Nock, 2009; Koyanagi et al., 2015; Lara et al., 2015). Substance abuse as a risk factor has been examined additionally in many studies (Miret et al., 2013; Hardt et al., 2015; Hiswals et al., 2015;). Other factors, like age (Rancans et al., 2016), gender (Gisle and Van Oyen, 2013), marital status (Forkman et al., 2012), employment status (Economou et al., 2013), adverse childhood experience (ten Have et al., 2013; Yip et al., 2015), stressful life event (Osvath et al., 2004; Nock et al., 2008a), poor physical health (Hawton and van Heeringen, 2009) or family psychiatric history (Saracli et al., 2016) among others, also constitute risk factors for suicidality.

Spain has participated in the European Study of the Epidemiology of

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Table 1
Prevalencerates of suicidality in Europe.

First Author	Pub. Year	Country	N[1]	Population at risk	Prevalence[2]	95%CI
Suicidality (Point)						
Castillejos	2019	Europe	1568	39,605	3.96	2.37–5.56
Death wish (Point)						
Aschan	2013	UK	26	1698	1.8	0.95–2.12
Suicidal ideation (Point) [Range: 0.8–10.50%; Average: 5.28%]						
Mc Donald	2017	England	60	7393	0.80	0.60–1.00
Aschan	2013	UK	23	1698	1.35	0.80–1.90
Bebbington	2009	UK	192	8580	2.24	1.92–2.55
Casey	2008	Spain			2.3	2.00–4.80
Gisle	2013	Belgium	186	4459	4.17	3.58–4.76
Economou	2013	Greece	114	2192	5.2	4.27-6.12–6.18
Ladwig	2008	Germany	170	3154	5.39	4.60–6.18
Gili-Planas	2001	Spain	45	697	6.5	4.63–8.28
Economou	2013	Greece	151	2256	6.7	5.66-7.72–14.81
Michal	2010	Germany	374	4912	7.61	6.87–8.36
Forkman	2012	Germany	201	2509	8.01	6.95–9.07
Polatöz	2011	Turkey	104	1117	9.13	10.82–7.44
Hintikka	2009	Finland	141	1339	10.50	8.86- 12.14–
Attempted suicide (Point) [Range: 0.01–1.5 %; Average:0.63%]						
Mc Donald	2017	UK	1	7393	0.01	−0.01–0.04
Economou	2013	Greece	24	2192	1.1	0.66–1.53
Economou	2013	Greece	34	2256	1.5	1.00–2,01
Attempted suicide (Lifetime) [Range: 0.55–5.04%; Average: 2.88%]						
Boyd	2015	Italy	26	4712	0.55	0.34–0.77
Scocco	2008	Italy	26	4712	0.55	0.34–0.76
Boyd	2015	Bulgaria	30	5318	0.57	0.37–0.77
Boyd	2015	Romania	19	2357	0.81	0.45–1.17
Polatöz	2011	Turkey	16	1117	1.43	0.73–2.13
Miret	2014	Spain	67	4583	1.46	1.10–1.79
Boyd	2015	Spain	81	5473	1.48	1.16–1.80
Boyd	2015	Germany	61	3555	1.73	1.30–2.16
Hard	2015	ESEMED	167	8796	1.9	1.61–2.18
Ten Have	2013	The Netherlands	146	6646	2.20	1.84–2.55
Boyd	2015	The Netherlands	55	2372	2.30	1.70–2.90
Bruffaerts	2015	Belgium	26	1043	2.49	1.55–3.44
Boyd	2015	Belgium	61	2419	2.51	1.89–3.14
Boyd	2015	France	99	2894	3.43	2.76–4.09
O'Neill	2014	UK	149	4340	3.43	2.89–3.97
Saracli	2016	Turkey	31	891	3.50	2.29–4.71
Boyd	2015	UK	153	4340	3.52	2.98–4.07
Boyd	2015	Portugal	138	3849	3.59	3.00–4.17
Atay	2012	Turkey	26	600	4.33	2.70–5.96
Mc Donald	2017	UK	355	7393	4.79	4.31–5.28
Gisle	2013	Belgium	215	4459	4.82	4.19–5.45
Bebbington	2009	UK	50	8580	5.01	4.55–5.47
Encrenaz	2012	France	1116	22,138	5.04	4.75–5.33

[1] N: number of cases.
[2] Prevalence rate per 100 inhabitants.

Mental Disorders [ESEMED] and presented results about prevalence for lifetime suicide ideation (4.4%) and attempts (1.5%) in the general population (Gabilondo et al., 2007). Other community Spanish studies have found point prevalence of suicidal ideation of 2.3% in the city of Santander, results from the European study "ODIN" (Casey et al., 2008), and 6.5% on the island of Formentera (Gili-Planas et al., 2001). Concerning risk factors for suicidality in Spain, there seems to be a significant relation being women, younger, lower education levels and having a mental disorders especially depression (Gabilondo et al., 2007; Miret et al., 2014). The data also suggest that the factors associated with suicidality vary among age groups (Miret et al., 2014). Despite these previous studies developed in Spain, little is known about the prevalence and associated factors of key behaviors related to suicide in the Spanish southern region of Andalusia, which is the largest autonomous community of Spain with a population of nearly 9 million inhabitants. Although, some studies, have been developed in this Spanish community, either concerning consumed suicide and its relationship with unemployment and the use of antidepressants (Alameda-Palacios et al., 2014) or about suicide attempts attended by prehospital emergency services (Córdoba-Doña et al., 2014; Mejías-Martín et al., 2018; Moreno-Küstner et al., 2019), none of them has been developed in the general population.

So, in response to the growing international interest in suicide prevention, from a public health perspective, and the importance to estimate prevalence data and calculate the impact of different risk domains from various geographical areas, we applied a community epidemiological approach to a wide and socio-economically diverse area in South of Spain, the PISMA-ep study (Epidemiological Study on Frequency and Risk Factors of Mental Disorders in Andalusia) that is the largest epidemiological mental health survey ever carried out in Andalusia. This research aims: 1) to estimate the prevalence of suicidality (including and differentiating a wide variety of suicidality components like death wish, self-harm ideas, suicidal thoughts, suicidal plan, and suicidal attempt); 2) to analyze a large number of demographic, psychosocial and clinical factors that could be associated to suicidal risk.

2. Method

2.1. Design and sample procedure

The PISMA-ep study is a cross-sectional household study conducted on a representative probability sample of non-institutionalized both male and female adult between18-75 years old. Participants were selected from a multistage clustered sample, using different standard stratification levels. 1) Proportional stratification that took into account the geographical zones of western and eastern Andalusia; 2) In each geographical zone city size was classified under three categories: urban (over 10,000 inhabitants), intermediate (between 2001 and 10,000 inhabitants) and rural (up to 2000 inhabitants); 3) In addition, we also stratified each sampling area of the 8 provinces of Andalusia, and finally 4) Within each province a simple random method was used to select between one and 5 municipal entities (cities) for each type of locality size (urban, intermediate or rural). Then, using the same simple randomization method and taking into account the age and sex quotas, the census sections and the districts of each chosen location, the final sampling areas were also selected. These were people of both sexes, between 18 and 75 years old, who were interviewed if they lived in houses on predetermined street routes within the districts and census sections previously identified at random. Every fourth house of consecutive houses was called. . The study interviews were held between 2013 and 2014, and went over a period of nearly a year. The PISMA-ep study was approved by the Research Ethics Committee of the University of Granada. A full description of the study methods can be found elsewhere (Cervilla et al., 2016).

2.2. Assessment of suicidality

Non-lethal suicide behavior was assessed with the suicidality module of the Spanish version of the Mini International Neuropsychiatric Interview (MINI-Plus 5.0) (Fig. 1).The suicidality module was composed of six questions including: death wish, ideas of self-harm, suicidal thoughts, suicidal plans and attempts all in the past-month and also lifetime suicide attempts. We have calculated the prevalence rates for each of the above mentioned items.

For the associated factors analysis, the outcome variable suicidal risk is based on a MINI system that the subjects were categorized as being ‘at risk of suicide’ or ‘no suicidal risk’. A "yes" answer on one of the six answered questions is considered a suicidal risk (Sheehan et al., 1998).

2.3. Assessment of associated factors

Based on the literature about risk factors of suicidality and taking into account the purpose of our research, we also explored the following sets of potential correlates of suicidality: demographic, psychosocial and clinical factors. A full description of the methods has been registered elsewhere (Cervilla et al., 2016).

Demographic factors such as gender, age, marital status, employment status, educational level, town size and province were collected using a questionnaire based on previous studies (Barona et al., 1984; Bilbao and Seisdedos, 2004).

The following psychosocial factors were considered. Personal and social performance levels of functioning were assessed using the Personal and Social Performance Scale, PSP (Morosini et al., 2000). Social support was measured with an inventory that evaluates what the person thinks about family and friends (Blaxter, 1990). Childhood experiences of physical, emotional or sexual abuse were assessed using the shortened version of the Childhood Trauma Questionnaire, CTQ (Fink et al., 1995). Recent stressful life events were evaluated using a brief validated checklist (Brugha et al., 1985). Personality traits such as neuroticism and impulsivity were evaluated using the Zuckerman-Kuhlman Personality Questionnaire, ZKPQ (Zuckerman, 2002).

Clinical variables such as family history of mental disorder and suicide in family members were assessed by an adaptation of the General Screening Questions and the Symptom Checklist of the Family Interview for Genetic Studies (NIMH, 2005). Presence of drugs

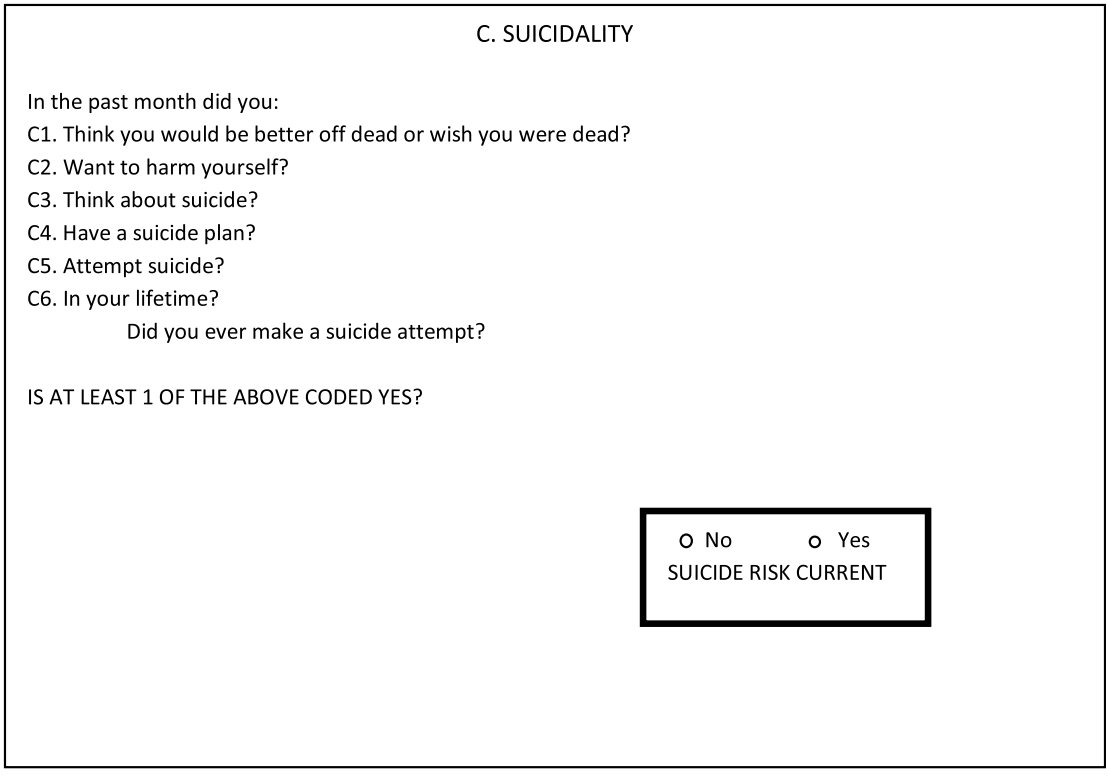

Fig. 1. Suicidality module of MINI (Mini International Neuropsychiatric Interview).

dependence was assessed using the appropriate section of the MINI (Sheehan et al., 1998). Alcohol consumption was assessed with the CAGE questionnaire (Ewing, 1984). Dependence of nicotine was evaluated by the Fagerström Test for Nicotine Dependence (Heatherton et al., 1991).

2.4. Response rate

The homes originally selected which did not respond after 4 different attempts or did not have any member within the set age and gender range were replaced by the next available person within the predetermined route. A total of 70.8% of homes initially selected had to be replaced. 37.7% ($N = 2074$) of homes chosen did not respond after all the attempts made and they had to be replaced due to a lack of response. Another third (33%) of homes originally chosen ($N = 1818$) were replaced because there was nobody within the age, gender and educational range which was matched in the area.

2.5. Data quality

The error rates of all the provinces were far below the 1% acceptability rate. The study designs, field procedures and sample weightings are detailed elsewhere (Cervilla et al., 2016).

2.6. Data analysis

Prevalence rates estimates of each item of suicidality (any items of suicide positive) were calculated with 95% confidence intervals. Explorative descriptive analyses including frequencies, percentages, mean and standard deviation values of all independent variables were calculated. Subsequently, we explored the univariate association between suicidal risk and different independent variables using *Chi square* test (two tails) and *Student´s* test, according to the normal distribution of the data. After checking the significant finding for each risk factor, in the final multivariable regression model, all variables were entered simultaneously to examine independent effects and odds ratios (OR) are presented. Statistical significance was assumed when the p was <0.05. Descriptive and univariate analysis were applied using the SPSS 20 (Package for the Social Sciences (SPSS) 2011). The software used for multivariate regression analysis was STATA 13 package (Statacorp 2012).

3. Results

3.1. Sample and response rate

4507 residents in Andalusia were interviewed, 50.9% were male. Mean age was 42.8 (SD = 15.22). A more detailed sample description can be found in Table 2 and a full description has been reported elsewhere (Cervilla et al., 2016).

3.2. Prevalence of suicidality

Prevalence rate of suicidality was 6.4% (95% CI: 5.7–7.12). Regarding the prevalence of suicidality components, according to the items set by the MINI are: showed a death wish 4.4% (95% CI: 3.84–5.04);had ideas of self-harm 1.4% (95% CI: 1.07–1.77);had suicidal thoughts 2.4% (95% CI: 1.95–2.84);had a suicidal plan 1.1% (95% CI, 0.8–1.42);had attempted suicide 0.6% (95% CI, 0.41–0.88) and manifesting all during the month prior to the interview, and, lastly, 2.6% (95% CI, 2.13–3.06) reported to have previously had some sort of suicide attempt during his/her life.

3.3. Asociated factor for suicidal risk

The univariate analysis showed that suicidal risk was associated with demographic factors such as female sex, older age, not having a stable partner, being unable to work because of illness or long-term disability, having unfinished primary educational level and to live in the province of Almeria. The psychosocial factors associated with suicidal risk are lower scores on social performance and social support, having had childhood abuse experiences (physical, emotional, and sexual), having a higher score on the stressful life events scale and a higher score on both, neuroticism and impulsivity traits. Suicidal risk was also associated with clinical factors including family history of mental disorder, any suicide in the family, drug dependence, higher alcohol consumption and nicotine dependence (Table 3).

A parsimonious multivariable model of association with suicidal risk was obtained including 3 demographic, 4 psychosocial and 3 clinical factors remained significantly correlated with suicidal risk: female, older age, not having a stable partner (being single/separated/divorced/widowed), less social support, physical childhood abuse, more stressful life events, higher neuroticism score, family history of mental disorder, drug dependence and nicotine dependence (Table 4). The largest OR among demographic factors was being single/separated/divorced/widowed [odds ratio (OR) 1.60, 95% CI 1.22–2.09, $p<0.001$]. The psychosocial factor with greater power of association with suicidal risk was the experiences of physical abuse in childhood [odds ratio (OR) 2.43, 95% CI 1.66–3.56, $p<0.001$]. Finally, drug dependence was the variable with the greatest association with suicidal risk among the different clinical factors [odds ratio (OR) 2.96, 95% CI 1.70–5.16, $p<0.001$], this last factor is also the one that shows the greatest OR for suicidal risk in whole multivariate model.

Table 2
Descriptive characteristics of study sample.

Variables	Total N = 4507
Gender	
Male	2214 (49.1)
Female	2293 (50.9)
Age	
18 −30	1106 (24.5)
31–45	1522 (33.8)
46–60	1135 (25.2)
61–75	744 (16.5)
Marital status	
Married/coupled	2747 (60.9)
Single/separated/divorced/widowed	1760 (39.1)
Employment status	
Employee or freelancer	1942 (43.1)
Student	316 (7.0)
Retired	504 (11.2)
Looking after the family or home	442 (9.8)
Unemployed	1221 (27.1)
Unable to work because of illness or long-term disability	81 (1.8)
Educational level	
Unfinished primary	614 (13,7)
Primary	1750 (38.8)
Secondary	1332 (29.6)
University	810 (18.0)
Town size	
Urban (+10,000 inhabitants)	3593 (79.7)
Intermediate (2001–10,000)	758 (16.8)
Rural (<2001)	156 (3.4)
Province	
Cordoba	430 (9.5)
Jaen	361 (8.0)
Malaga	870 (19.3)
Granada	496 (11.0)
Sevilla	1030 (22.8)
Huelva	280 (6.2)
Cadiz	665 (14.7)
Almeria	375 (8.3)

Data expressed as N (%).

Table 3
Univariate association for suicidal risk*.

Variables	Total	Suicidal risk		Statistics[a] F or X^2	P value
		No	Yes		
Number of individuals, n (%)	4507 (100)	4218 (93.6)	289 (6.4)		
Gender, n (%)					
Male	2214 (49.1)	2102 (94.9)	112 (5.1)	13.285	< 0.001
Female	2293 (50.9)	2116 (92.3)	177 (7.7)		
Age, Mean (SD)	42.80 (15.22)	42.67 (15.25)	44.70 (14.54)	−2.292	< 0.001
Marital status, n (%)					
Married/coupled	2747 (60.9)	2613 (95.1)	134 (4.9)	27.591	< 0.001
Single/separated/divorced/widowed	1760 (39.1)	1605 (92.2)	155 (8.8)		
Employment status, n (%)					
Employee or freelancer	1942 (43.1)	1857 (95.6)	85 (4.4)	47.727	< 0.001
Student	316 (7.0)	300 (94.9)	16 (5.1)		
Retired	504 (11.2)	474 (94.0)	30 (6.0)		
Looking after the family or home	442 (9.8)	405 (91.6)	37 (8.4)		
Unemployed	1221 (27.1)	1116 (91.3)	106 (8.7)		
Unable to work because of illness or long-term disability	81 (1.8)	66 (81,5)	15 (18.5)		
Educational level, n (%)					
Unfinished primary	614 (13,7)	542 (88.3)	72 (8.7)	36.937	< 0.001
Primary	1750 (38.8)	1652 (94.3)	99 (5.7)		
Secondary	1332 (29.6)	1250 (93.8)	82 (6.2)		
University	810 (18.0)	774 (95.6)	36 (4.4)		
Town size, n (%)					
Urban (+10,000 inhabitants)	3593 (79.7)	3354 (93.3)	239 (6.7)	2.522	0.283
Intermediate (2001–10,000)	758 (16.8)	714 (94.2)	44 (5.8)		
Rural (< 2001)	156 (3.4)	150 (96.2)	6 (3.8)		
Province, n (%)					
Cordoba	430 (9.5)	414 (96.3)	16 (3.7)	30.846	< 0.001
Jaen	361 (8.0)	345 (95.6)	16 (4.4)		
Malaga	870 (19.3)	824 (94.7)	46 (5.6)		
Granada	496 (11.0)	467 (94.2)	29 (5.8)		
Sevilla	1030 (22.8)	969 (94.1)	61 (5.9)		
Huelva	280 (6.2)	259 (92.5)	21 (7.5)		
Cadiz	665 (14.7)	607 (91.3)	58 (8.7)		
Almeria	375 (8.3)	333 (88.8)	42 (11.2)		
Personal and social performance Mean (SD)	95.43 (11.07)	96.29 (9.59)	82.89 (20.06)	11.267	< 0.001
Social support, Mean (SD)	20.30 (1.86)	20.41 (1.66)	18.83 (3.40)	7.8	< 0.001
Physical childhood abuse, n (%)					
No	4247 (94.2)	4015 (94.5)	232 (5.5)	110.616	< 0.001
Yes	260 (5.8)	203 (71.8)	57 (21.9)		
Psychological childhood abuse, n (%)					
No	4155 (92.2)	3953 (95.1)	202 (4.9)	213.160	< 0.001
Yes	352 (7.8)	265 (75.3)	87 (24.7)		
Sexual childhood abuse, n (%)					
No	4459 (98.9)	4190 (94.0)	269 (6.0)	100.482	< 0.001
Yes	48 (1.1)	28 (58.3)	20 (41.7)		
Stressful life events, n (%)					
No	2110 (46.8)	2047 (97.0)	63 (3.0)	77.601	< 0.001
Yes	2397 (53.2)	2171 (90.62)	226 (9.4)		
Neuroticism personal traits Mean (SD)	1.72 (1.49)	1.66 (1.48)	2.51 (1.50)	−11.746	< 0.001
Impulsivity personal traits Mean (SD)	−0.98 (1.23)	−1.01 (1.21)	−0.52 (1.39)	−6.209	< 0.001
Family history of mental disorder, n (%)					
No	3754 (83.3)	3571 (95.1)	183 (4.9)	88.991	< 0.001
Yes	751 (16.7)	645 (85.9)	106 (14.1)		
Any suicide in the family, n (%)					
No	4470 (99.2)	4190 (93.7)	280 (6.3)	19.945	< 0.001
Yes	37 (0.8)	28 (75.7)	9 (24.3)		
Drugs dependence, n (%)					
No	4408 (97.8)	4147 (94.1)	261 (5.9)	80.681	< 0.001
Yes	99 (2.2)	71 (71.7)	28 (28.3)		
Alcohol consumption, Mean (SD)	0.17 (0.59)	0.16 (0.57)	0.36 (0.88)	−3.7	< 0.001
Nicotine dependence n (%)					
No	4087 (90.7)	3854 (94.3)	233 (5.7)	37.191	< 0.001
Yes	419 (9.3)	363 (86.60)	56 (13.4)		

[a]Student's *t*-test or chi-square test (two tailed).
*Suicidality: any affirmative question of the suicidality module of MINI interview.

4. Discussion

This cross-sectional study showed that suicidality defined as non-lethal suicide behavior is a relatively highly prevalent situation in the Andalusian population, affecting over 1 in every 25 persons. We also found numerous potential risk factors of different domains such as demographics, psychological and clinical which appear to be associated with current suicidal risk. To the best of our knowledge, this study is the first epidemiological survey on the prevalence of suicidality in the region of Andalusia and one of very few in Spain. The main strength of the study is that it was performed on a large sample (N = 4507) with a global response rate of 83.7% that is representative of the Andalusian

Table 4
Multivariate logistic regression for suicidal risk.

Variables	OR	95% CI	P value
Gender	1.38	1.04–1.82	0.02
Male (reference)			
Female			
Age	1.01	1.00–1.02	< 0.001
Marital Status			
Married/coupled (reference)	1.60	1.22–2.09	< 0.001
Single/separated/divorced/widowed			
Social support	0.86	0.82–0.90	< 0.001
Physical childhood abuse		1.66–3.56	< 0.001
No (reference)	2.43		
Yes			
Stressful life events			
No (reference)			
Yes	1.45	1.30–1.63	< 0.001
Neuroticism, personal traits	1.34	1.25–1.43	< 0.001
Family history of mental disorders	1.88	1.40–2.51	< 0.001
No (reference)			
Yes			
Drugs dependence	2.96	1.70–5.16	< 0.001
Alcohol consumption	1.17	0.98–1.38	0.07
Nicotine dependence	1.68	1.17–2.41	< 0.001
No (reference)			
Yes			

*Suicidal risk: any affirmative question of the suicidality module of MINI interview.

population.

4.1. Definition of suicidality used

In our definition of suicidality, we included concepts that ranged from death wish, ideas of self-harm and suicidal thoughts, planning or attempts, and all which are included in the nomenclature of Silverman et al. (2007), of greater current recognition in the scientific community. We justify such a broad concept of suicidality given the seriousness of all such items and in accordance with the latest reports submitted by WHO on suicide prevention (2014, 2019). The latter suggest the difficulty of evaluating the real suicidal intentionality within each one of these measures due to the ambivalence and concealment surrounding suicidal behaviour. On the other hand, the inclusion of different levels, from the mildest (wish of death) to the most serious (suicide attempt), allows us to expand the range of possibilities, adapt preventive measures to people possibly at risk. We have also classified our outcome result of suicidal risk with a proper method following the MINI module of suicidality, because we wanted to analyse differences between the groups of persons who had any positive item of suicidality compared to the general population.

4.2. Prevalence of suicidality

We found a 1-month prevalence of 6.4% among adult persons with at least one point on the MINI Suicidality Module. A recent meta-analysis indicates an average prevalence of 3.96% for suicidality in Europe (Castillejos et al., 2020). Our prevalence would be above this figure. It is possible that the inclusion of more elements of suicidality in this study could imply an overestimation of prevalence if compared with other epidemiological studies, being difficult to establish equivalences and comparisons (Table 1). This could be due to a narrower focus used in other studies. Death wish was the most prevalent element and attempted suicide was the less prevalent. On the whole, our study reports prevalence rates of suicidality and its components that generally compare favourably well with what could be expected from previous European reports (Table 1). Thus, prevalence of death wishes is higher if compared with Aschan et al. (2013) who found a much lower prevalence of 1.8% in the United Kingdom. Conversely, one of the more novel results is our prevalence figure of suicidal thoughts (2.4%) which is nearly fifty percent lower compared with the average of 5.28% found in the systematic review (Castillejos et al., 2020). Additionally, our prevalence figure for suicidal ideation is well within the range reported by an array of different European studies conducted during the last years, that ranged between: 0.8 – 10.50% (Gili-Planas et al., 2001; Casey et al., 2008; Ladwig et al., 2008; Bebbington et al., 2009; Hintikka et al., 2009; Michal et al., 2010; Polatöz et al., 2011; Forkman et al., 2012; Aschan et al., 2013; Economou et al., 2013; Gisle and Van Oyen, 2013; Economou et al., 2016; Mc Donald, 2017). One explication concerning our lower rate of suicidal thoughts is that the suicidality module of the MINI included 2 questions concerning less severe suicidal behavior as “Think you would be better off dead or wish you were dead?” or “Want to harm yourself?”. So, in this situation, persons have more options to choose an answer according to their suicidal feeling, however in studies in which the only item is suicidal ideation, these people have to choose this option even when the feeling is less severe.

We have found 4 studies in European countries on current suicide attempts which report a prevalence range between 0.01% (McDonald et al., 2017) and 1.5% (Economou et al., 2013; Economou et al., 2016), whilst our reported rate is one of 0.6% very similar to the average of the studies (0.63%) (Table 1).

Finally, regarding lifetime attempts, considered the most severe behavior of suicide, we have found 23 different reports from European studies raging from 0.55% to 5.04% (Scocco et al., 2008; Bebbington et al., 2009; Polatöz et al., 2011; Atay et al., 2012;Encrenaz et al., 2012; Miret et al., 2014; Gisle and Van Oyen, 2013; Miret et al., 2014; O´Neill et al., 2014; Boyd et al., 2015; Bruffaerts et al., 2015; Hardt et al., 2015; McDonald et al., 2017) which places our 2.6% prevalence right in the median of this interval and very similar to the average of 2.9% (Castillejos et al., 2020). If compared with Spanish figures, our result exceeds figures from previous reports (Gabilondo et al., 2007; Miret et al., 2014). This can plausibly be attributable to regional differences, different timings (our survey occurred in the middle of a serious financial crisis) and different assessment tools. Indeed, relatively higher prevalence in our study when compared with other Spanish studies are in accordance with reports suggesting that economic crisis in Andalusia has had an impact on the increase of attempts of suicidal rates due to unemployment (Córdoba-Doña et al., 2014; López-Bernal et al., 2014). However, the relation between economic crisis and suicide are rather complex and open to controversy as reported by Masedo and Moreno-Küstner (2015). These data, nonetheless, provide an invitation to study those social factors such as the economic situation, unemployment or other cultural and demographic factors that could mediate higher rates of life prevalence of suicide attempts in Andalusia if compared to the rest of Spain, with the aim of establishing adequate preventive measures adapted to each community.

4.3. Associated factor with suicidal risk

4.3.1. Demographic factors

Our results show that female gender associated with suicidal risk is in line with most others on suicidality (except for actual consummated suicide) (Gabilondo et al., 2007; Nock et al., 2008a; Borges et al., 2010, Meltzer et al., 2011; Gisle and Van Oyen, 2013; Hardt et al., 2015; Hiswals et al., 2015).

We found a trend for higher suicidal risk as participants’ age increase. Previous studies have presented contradictory data. Thus, whilst some studies associated suicide behaviours with younger age groups (Bernal et al., 2007; Nock et al., 2008b; Scocco et al., 2008; Hintikka et al., 2009; Borges et al., 2010; Kovess-Masfety et al., 2011; Forkman et al., 2012; Gisle and Van Oyen, 2013; Hiswals et al., 2015; Lara et al., 2015;), others point towards an association of suicide behaviour with older age groups (Scocco et al., 2008; Forkman et al., 2012; Rancans et al., 2016). Finally, there are others papers in which

age showed no direct effects on suicidal risk (Hardt et al., 2015).

Additionally, not having a partner (being single/separated/divorced/widowed) is also associated with people who present a higher suicidal risk as shown in a large number of previous reports (Weissman et al., 1999; Kposowa, 2000; Bertolote et al., 2005; Corcoran and Nagar, 2010; Meltzer et al., 2011; Forkman et al., 2012; Gisle and Van Oyen, 2013; Hiswals et al., 2015; Yip et al., 2015). This finding is supported by the notion that an intimate partner can act as a vehicle that facilitates greater social integration and more supportive social networks (Corcoran et al., 2010).

4.3.2. Psychosocial variables

It is well-documented that different forms of child abuse significantly increases the risk for suicide (Felitti et al., 1998; Bruffaerts et al., 2015; Saracli et al., 2016; Turecki and Brent, 2016) thus supporting our finding of an association between suicidal risk and physical child abuse (Hardt et al., 2008; Bruffaerts et al., 2010; Borges et al., 2010; ten Have et al., 2013; Hartd et al., 2015). Our finding is also in line with the hypothesis suggesting that early experience of violence like physical abuse, harsh physical punishment and other early experience of violence may lower the threshold to later act violently against oneself (Hardt et al., 2008, 2015). It is striking that the variable sexual abuse in childhood had no significant relationship with suicidal behavior. It is likely that the sample size ($n = 48$) make this association difficult. Lower levels of social support and higher exposure to previous stressful life events are also associated with suicidal risk as extensively reported earlier (Vijayakumar and Rajkumar, 1999; Phillips et al., 2002; Osvath et al., 2004; Chaqueta and Stiles 2007; Nock et al., 2008b; You et al., 2011; Kleiman et al., 2012; Liu and Miller, 2014). Finally, neuroticism has also previously been reported as associated to increased suicidal risk (Nordström et al., 1995; Beautrais et al., 1999; Fergusson et al., 2003). This factor is generally higher especially in younger adults with serious intent, concurrent substance misuse and affective disorders (Brezo et al., 2006). We suggest that clinical measuring of neuroticism, mainly in young people, can be of help as a preventative approach to suicide risk assessment.

4.3.3. Clinical variables

In our study, any suicide in the family and family history of mental disorders were both univariately associated with suicidal risk although only the effects of family history of mental disorders held significant as an independent variable associated with suicidal risk. This replicates previous reports (Kendler and Prescott, 2007; Nock et al., 2008b). Indeed, living during the childhood and adolescence with a person suffering from a mental disorder could be a risk factor for future emotional problems that, in turn can trigger a higher degree of suicidal risk (Nock et al., 2008b; Ayuso et al., 2012). Similarly, drug dependence can be a sign of emotional problems that increase suicidality levels and many previous reports of an association between suicidality and drug or nicotine abuse exist (Kessler et al., 1999; Breslau et al., 2005; Gabilondo et al., 2007; Kessler et al., 2007; Bronisch et al., 2008; Riala et al., 2009; Meltzer et al., 2011; Qin, 2011; Hardt et al., 2015). Indeed, nicotine dependence is a variable strongly associated with different psychiatric disorders (Grant et al., 2004; Pulay et al., 2010), and the presence of any psychiatric disorder is a well stablished risk factor for suicidal behavior (Kessler et al., 2001; Nock et al., 2008b; Yaworski et al., 2011; Hardt et al., 2015).

4.3.4. Limitations and strengths

There are limitations to this report. A first limitation is that the instrument employed to measure suicidality is a screening tool rather than a more in-depth diagnostic measure. Nevertheless, the suicidality module of the MINI has previously been used in suicidality studies both at clinical (Tajudeenet et al., 2013; Guimaräes et al., 2014; Klug et al., 2015) and general population levels (Jeon et al., 2014; You et al., 2011). Secondly, it has been suggested that when suicidality is enquired upon by an interviewer there is a tendency to infra-report it when compared with auto-administered suicidality reports (Turner et al., 1998). Conversely, questions on death wish have been shown to generate higher prevalence estimates for suicidality than more difficult probing questions on "seriously considering suicide" (Scocco and de Leo, 2002; Nock et al., 2008b). Thirdly, it could be considered a limitation of the study, to include a suicide attempt as part of the current suicide risk, however, a history of attempted suicide was found to have high sensitivity (0.80) and very high specificity (0.97) in differentiating between suicidal and non-suicidal adult inpatients (Osman et al., 2001). In addition, it is the strongest and most robust predictor of suicide completion in mental disorder (Harris, 1997; Hawton, 2009) and it is a risk factor highly ranked for suicide assessed by most practitioners (Osman et al., 2001; Truant et al., 1991). Morever, we have used it as proposed by the developers of MINI and the aforementioned rationales, the item of previous suicide attempt of this MINI module was therefore included as a part of the current suicide risk. However, in our study we have not classified suicide risk according to severity of suicidal manifestations proposed by Sheean et al. (1998). Fourth, although we include a wide array of correlating factors, there are many other potential correlates of suicidal risk that were not included. Finally, this is a cross-sectional study which cannot establish causal relationships between exposures and outcomes, which weakens its ability to establish preventive recommendations based on the predictability of the model.

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CRediT authorship contribution statement

Paloma Huertas: . Berta Moreno-Küstner: Writing - original draft, Writing - review & editing. **Blanca Gutiérrez:** Writing - review & editing. **Jorge A. Cervilla:** Data curation, Writing - original draft, Writing - review & editing.

Declaration of Competing Interest

None.

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